

Appendix H

V-Tanks Characterization Sampling Data

H⁻²

APPENDIX H

V-TANKS CHARACTERIZATION SAMPLING DATA

This appendix presents the historical sampling results for the V-Tank contents, ancillary lines and equipment, contaminated soil, and the Test Area North (TAN)-1704 valve box.

H-1. TANK CONTENTS

The V-Tank contents were sampled under two investigations: the 1993 Track 2 investigation and the 1996 remedial investigation/feasibility study (RI/FS). The 1993 Track 2 investigation sampled Tanks V-1, V-2, and V-3, but did not sample Tank V-9. Sample results for the Track 2 investigation were reported in the *Preliminary Scoping Track 2 Summary Report for the Test Area North Operable Unit 1-05: Radioactive Contamination Sites* (Idaho National Engineering and Environmental Laboratory [INEEL] 1994) and are summarized in the following tables:

- Table H-1, 1993 summary table for V-Tanks sludge sampling
- Table H-2, 1993 summary table for V-Tanks liquid sampling.

The 1996 RI/FS collected discrete liquid and sludge samples from Tanks V-1, V-2, V-3, and V-9. To further separate the phases, gravimetric filtration was conducted on samples obtained from Tanks V-1, V-2, and V-3. To prevent the release of volatile constituents, volatile organic compound (VOC) sample aliquots from these tanks were not filtered. The VOC analyses for Tanks V-1, V-2, and V-3 were conducted on watery sludge only and are reported as the sludge phase. The sample results from the 1996 RI/FS were reported in the *Comprehensive Remedial Investigation/Feasibility Study for the Test Area North Operable Unit 1-10 at the Idaho National Engineering and Environmental Laboratory* (Department of Energy Idaho Operations Office [DOE-ID] 1997) and are summarized in the tables and figures that follow.

H-1.1 Tanks V-1, V-2, and V-3

Figures H-1 through H-3 illustrate the 1996 sample locations within Tanks V-1, V-2, and V-3. Sampling results are summarized in the following tables:

Tank Sludge

- Tables H-3 through H-5, Radionuclide results
- Tables H-6 through H-8, VOC results
- Tables H-9 through H-11, Semivolatile organic compound (SVOC) results
- Tables H-12 through H-14, Polychlorinated biphenyl (PCB) results
- Tables H-15 through H-17, Inorganic results
- Tables H-18 through H-20, Miscellaneous analyses.

Tank Liquid

- Tables H-21 through H-23, Radionuclide results
- Table H-22, SVOC results
- Table H-23, PCB results
- Table H-24, Miscellaneous analyses.

H-1.2 Tank V-9

Figure H-4 illustrates the 1996 Tank V-9 sample locations. Sampling results are summarized in the following tables:

Tank Sludge and Liquid

- Table H-25, Radionuclide results
- Table H-26, VOC results
- Table H-27, SVOC results
- Table H-28, PCB results
- Table H-29, Inorganic results
- Table H-30 and H-31, Miscellaneous analyses.

H-2. SAND FILTER SAMPLING

In 1997, the sand filter was sampled to characterize the filter contents (DOE-ID 2000). The sampling results are summarized in Tables H-32 and H-33.

H-3. SOIL SAMPLING

Soil sampling was conducted in four separate events: 1983, 1988, 1993 Track 2, and 1998. In 1983, sampling for gamma emitters was conducted as part of a decontamination and decommissioning project (INEEL 1994). Sampling locations for the 1983 event are shown in Figure H-5 and are summarized in the following tables:

- Table H-34, Surface soil radionuclide counts
- Table H-35, Gamma emitter radionuclides results.

In 1988, the Department of Energy collected surface and subsurface soils from three boreholes as part of an environmental survey (INEEL 1994). Samples were analyzed for VOCs, SVOCs, metals, and beta/gamma activity. No VOCs or SVOCs were detected. The sample locations are shown in Figure H-6, and results are summarized in Table H-36, Beta/gamma activity and total metals results.

The 1993 Track 2 investigation sampled three boreholes in the vicinity of the V-Tanks. The location of the boreholes is shown in Figure H-7, and results are summarized in the following tables:

- Table H-37, Summary of analytes detected and results
- Table H-38, VOC results
- Table H-39, SVOC results
- Table H-40, PCB results
- Table H-41, Inorganic results.

In 1998, samples were collected to determine the preliminary waste classification of future excavated soil (DOE-ID 1998). Figure H-8 depicts the sample locations. Results of the sampling effort are summarized in Table H-42.

H-4. TAN-1704 VALVE PIT

The TAN-1704 valve pit is not considered a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) component. Results for the 2000 sampling event are presented in *Characterization and Decision Analysis Report for TAN-616 Liquid Waste Treatment Facility* (INEEL 2001) and are summarized in the following tables:

- Table H-43, TAN-1704 valve pit liquid
- Table H-44, TAN-1704 valve pit liquid duplicate sample.

H-5. REFERENCES

DOE-ID, 1992, *Track 1 Sites: Guidance for Assessing Low Probability Sites at the INEL*, Department of Energy Idaho Operations Office, DOE/ID-10340, Rev. 1, July 1992.

DOE-ID, 1994, *Track 2 Sites: Guidance for Assessing Low Probability Hazard Sites at the INEL*, Department of Energy Idaho Operations Office, DOE/ID-10389, Rev. 6, January 1994.

DOE-ID, 1997, *Comprehensive Remedial Investigation/Feasibility Study for the Test Area North, Operable Unit 1-10 at the Idaho National Engineering and Environmental Laboratory*, Department of Energy Idaho Operations Office, DOE/ID-10557, Rev. 0, November 1997.

DOE-ID, 1998, *Field Sampling Plan for Test Area North TSF-09, TSF-18, and TSF-26 Area Soils*, Department of Energy Idaho Operations Office, DOE/ID-10635, Rev. 0, June 1998.

DOE-ID, 2000, *Field Sampling Plan for the V-Tanks, TSF-09 and TSF-18, at Waste Area Group 1, Operable Unit 1-10 Remedial Action*, Department of Energy Idaho Operations Office, DOE/ID-10794, Rev. 0, November 2000.

INEEL, 1994, *Preliminary Scoping Track 2 Summary Report for the Test Area North Operable Unit 1-05: Radioactive Contamination Sites*, Idaho National Engineering Laboratory, INEL-94/0135, Rev. 0, October 1994.

INEEL, 2001, *Characterization and Decision Analysis Report for TAN-616 Liquid Waste Treatment Facility*, Idaho National Engineering and Environmental Laboratory, INEEL/EXT-01-00029, Rev. 0, May 2001.

Tank Contents

Table H-1. 1993 summary table for V-Tank sludge sampling.

Isotope parameter	V1	V2		V3		
	T1600101VK	T1600102VK	T1600301VK	T1600302VK	T1600501VK	T1600502VK
Gamma-emitting isotopic analysis (pCi/g)						
Cobalt-60	6.59 ± 0.37 E+4	5.46 ± 0.26 E+4	6.65 ± 0.36 E+4	3.73 ± 0.20 E+4	6.16 ± 0.33 E+3	6.54 ± 0.32 E+3
Cesium-134	ND	ND	ND	ND	ND	ND
Cesium-137	5.46 ± 0.18 E+6	3.3 ± 0.09 E+6	5.86 ± 0.18 E+6	4.51 ± 0.12 E+6	1.28 ± 0.05 E+7	1.32 ± 0.08 E+7
Europium-152	ND	ND	ND	ND	ND	ND
Europium-154	ND	ND	ND	ND	ND	ND
Alpha-emitting isotopic analysis (pCi/g)						
Plutonium-238	9.3 ± 0.6 E+1	9.95 ± 0.55 E+1	7.41 ± 0.33 E+1	1.01 ± 0.04 E+2	3.46 ± 0.13 E+2	3.84 ± 0.07 E+2
Plutonium-239/240	9.0 ± 0.6 E+1	5.95 ± 0.42 E+1	6.59 ± 0.32 E+1	7.68 ± 0.31 E+1	2.63 ± 0.11 E+2	3.05 ± 0.06 E+2
Thorium-228	0.00	-2.3 E+2	0.00	0.00	3.8 ± 5.5 E-1	0.00
Thorium-230	0.00	-5.7 E-1	-3.1 E-1	0.00	-2.5 E-1	0.00
Thorium-232	0.00	-2.8 E-1	0.00	0.00	-1.3 E-1	0.00
Americium-241	1.62 ± 0.07 E+2	2.17 ± 0.14 E+2	5.51 ± 0.29 E+1	8.11 ± 0.32 E+1	2.02 ± 0.05 E+2	1.97 ± 0.05 E+2
Uranium-234	4.06 E-2	3.93 E-2	4.10 E-2	4.71 E-2	5.10 E-2	6.91 E-2
Uranium-235	1.30 E-3	1.32 E-3	1.35 E-3	1.52 E-3	1.77 E-3	2.23 E-3
Uranium-236	3.79 E-4	3.92 E-4	3.95 E-4	4.96 E-4	4.73 E-4	5.45 E-4
Uranium-238	6.75 E-5	6.92 E-5	1.02 E-4	1.22 E-4	1.36 E-4	1.71 E-4
Beta-emitting isotopic analysis (pCi/g)						
Gross beta	1.01 ± 0.01 E+7	9.54 ± 0.10 E+6	8.70 ± 0.10 E+6	9.32 ± 0.10 E+6	1.70 ± 0.02 E+7	1.34 ± 0.01 E+7
Total Strontium	2.29 ± 0.06 E+6	1.74 ± 0.05 E+6	8.92 ± 0.50 E+5	1.12 ± 0.04 E+6	2.49 ± 0.05 E+6	2.55 ± 0.04 E+6

H-6

Table H-1. (continued).

Isotope parameter	V1			V2			V3		
	T1600101VK	T1600102VK	T1600301VK	T1600302VK	T1600501VK	T1600502VK			
Metallic inorganic Contract Laboratory Program (CLP) analysis (mg/kg)									
Barium	600 R	513 R	1,100 R	1,160 R	1,590 R	1,459 R			
Cadmium	71.7	68.8	253	247	102 J	102 J			
Chromium	3,770	3,680 R	4,870 R	4,570 R	3,570 R	3,540 R			
Lead	3,190	3,230	1,180	1,330	1,860 WJ	1,890			
Mercury	890	732	256	288	1,040	1,020			
Silver	1,000 J	900 J	1,120 J	1,120 J	1,280 J	1,310 J			
Volatile organic CLP analysis (µg/kg)									
Acetone	2,200 R	ND	ND	ND	ND	ND			
Trichloroethene	23,000 J	ND	ND	ND	ND	ND			
Tetrachloroethylene	1,000,000 EJ	1,800,000	440,000 J	541,000 J	430,000	480,000			
Metallic inorganic TCLP analysis^a (µg/L)									
Barium	2,320 NJ	2,180 NJ	1,100 NJ	1,150 NJ	1,820 NJ	1,400			
Cadmium	303 DJ	331 DJ	1,160 DJ	1,210 DJ	190 DJ	134 DJ			
Chromium	286 NJ	301 NJ	696 NJ	760 NJ	601 NJ	380 NJ			
Lead	81.7 NJ	40.1 NJ	51.6 NJ	46.5 NJ	42.6 NJ	40.1 NUJ			
Mercury	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ			
Silver	18 DJ	17.5 DJ	16.1 DJ	21.7 DJ	15.4 DJ	16.0 DJ			
Volatile organic TCLP analysis^b (µg/kg)									
Trichloroethene	3,705 J	710 J	2,387 J	2,587 J					
Tetrachloroethylene	18,717 J	8,658 J							

Table H-1. (continued).

Isotope parameter	V1	V2		V3	
	T1600101VK	T1600102VK	T1600301VK	T1600302VK	T1600501VK
a. The complete set of metallic inorganic results is provided in Appendix F, Section 9 from the Track 2 Summary Report (INEL-94/0135). Only the primary contaminants of concern (COCs) are provided here.					
b. The complete set of volatile organic results is provided in Appendix F, Section 9 from the Track 2 Summary Report (INEL-94/0135). Only the positive detection results are provided here.					

ND = Non detect.
J = The analyte was analyzed for and was positively identified, but could not be quantified.
UJ = The analyte was analyzed for and was not above the level of the associated value.
N = Analysis indicates that an analytic is present, and there are strong indications the identity is correct.
M = Duplicate injection precision not met.
R = Rejected.
EJ = The reported value is estimated because of the presence of interference.
D = Compounds identified are at a secondary dilution factor.

Table H-2. 1993 summary table for V-Tank liquid sampling.

Isotope parameter	V1		V2		V3	
	T1600101VK	T1600102VK	T1600301VK	T1600302VK	T1600501VK	T1600502VK
Gamma-emitting isotopic analysis (pCi/L)						
Cobalt-60	1.01 ± 0.04 E+5	7.70 ± 0.35 E+4	9.5 ± 1.0 E+3	1.05 ± 0.10 E+4	5.41 ± 0.39 E+3	5.70 ± 0.46 E+3
Cesium-134	1.69 ± 0.19 E+4	1.10 ± 0.17 E+4	ND	ND	1.22 ± 0.20 E+3	1.41 ± 0.43 E+3
Cesium-137	1.25 ± 0.04 E+7	9.92 ± 0.30 E+6	2.02 ± 0.06 E+7	2.02 ± 0.06 E+7	1.15 ± 0.04 E+6	1.16 ± 0.04 E+6
Europium-152	8.38 ± 0.89 E+4	7.8 ± 1.1 E+4	ND	ND	ND	ND
Europium-154	9.38 ± 0.98 E+4	6.73 ± 0.62 E+4	ND	ND	ND	ND
Alpha-emitting isotopic analysis (pCi/L)						
Plutonium-238	7.01 ± 0.22 E+3	6.70 ± 0.22 E+3	4.7 ± 1.8 E+1	3.32 ± 0.69 E+1	2.95 ± 0.46 E+1	1.46 ± 0.60 E+1
Plutonium-239/240	3.22 ± 0.18 E+3	3.03 ± 0.18 E+3	0.00	0.00	0.00	0.00
Thorium-228	5.3 ± 1.6 E+0	2.7 ± 2.5 E+0	0.00	0.00	0.00	-5.4 E+0
Thorium-230	-4.8 E-1	-9.0 E-1	-1.6 E+0	-4.8 E-1	-4.8 E-1	-9.0 E-1
Thorium-232	-4.8 E-1	-4.5 E-1	0.00	-4.8 E-1	-4.8 E-1	-4.5 E-1
Americium-241	8.68 ± 0.57 E+3	8.73 ± 0.31 E+3	1.57 ± 0.29 E+1	1.46 ± 0.24 E+1	1.23 ± 0.23 E+1	2.41 ± 0.60 E+1
Uranium-234	5.35 E+0	3.54 E+0	2.28 E+0	1.52 E+0	1.14 E+0	1.9 E-7
Uranium-235	7.59 E-2	8.63 E-2	3.86 E-2	3.91 E-2	3.59 E-2	3.48 E-2
Uranium-236	7.13 E-2	7.35 E-2	5.91 E-2	6.31 E-2	3.58 E-2	7.68 E-2
Uranium-238	2.87 E-2	3.38 E-2	1.41 E-2	1.40 E-2	4.50 E-2	4.43 E-3
Beta-emitting isotopic analysis (pCi/L)						
Gross beta	1.16 ± 0.02 E+7	1.17 ± 0.02 E+7	2.52 ± 0.02 E+7	2.34 ± 0.02 E+7	9.78 ± 0.12 E+6	7.73 ± 0.12 E+6
Tritium	1.18 ± 0.17 E+7	1.63 ± 0.45 E+7	6.70 ± 0.05 E+7	6.70 ± 0.05 E+7	3.06 ± 0.23 E+7	3.44 ± 0.83 E+7
Total Strontium	1.84 ± 0.11 E+6	2.16 ± 0.12 E+6	1.52 ± 0.12 E+6	1.45 ± 0.12 E+6	2.69 ± 0.09 E+6	2.70 ± 0.09 E+6

Table H-2. (continued).

Isotope parameter	V1		V2		V3	
	T1600101VK	T1600102VK	T1600301VK	T1600302VK	T1600501VK	T1600502VK
Metallic inorganic CLP analysis^a (µg/L)						
Barium	250 UJ	253 UJ	163 BUJ	163 BUJ	191 BUJ	189 BUJ
Cadmium	49.9	42.6 J	4.4 U	4.4 J	4.4 JU	4.4 U
Chromium	398	323 J	39.2 U	39.2 J	10.6 U	10.8 J
Lead	842 J	716 W	3.7 MU	3.6 UN	32.7 W	68.2 W
Mercury	367	369	1.0 U	1.0 U	1.0 U	1.0 U
Silver	58.9	43 J	2.4 J	2.4 U	2.4 U	2.4 U
Volatile organic CLP analysis^b (µg/L)						
Methylene Chloride	11 U		10 UJ		10 U	
Vinyl Chloride	10 UJ		20 J		11 J	
1,1-Dichloroethene	10 UJ		36 J		19	
1,1-Dichloroethane	58 J		370 EJ		200	
Trichloroethene	160 J		300 EJ		200	
Tetrachloroethene	140 J		10 UJ		10 U	

- H
SI-13
- a. The complete set of metallic inorganic results is provided in Appendix F, Section 9 from the Track 2 Summary Report (INEL-94/0135). Only the primary contaminants of concern (COCs) are provided here.
 - b. The complete set of volatile organic results is provided in Appendix F, Section 9 from the Track 2 Summary Report (INEL-94/0135). Only the positive detection results are provided here.

ND = Non detect.

U = The analyte was analyzed for and is definitely not present.

J = The analyte was analyzed for and was positively identified, but could not be quantified.

UJ = The analyte was analyzed for and was not above the level of the associated value.

W = Postdigestion spike for AA Furnace analysis is out of control.

B = Analyte found in associated blank.

N = Analysis indicates that an analyte is present, and there are strong indications the identity is correct.

M = Duplicate injection precision not met.

EJ = The reported value is estimated because of the presence of interference.

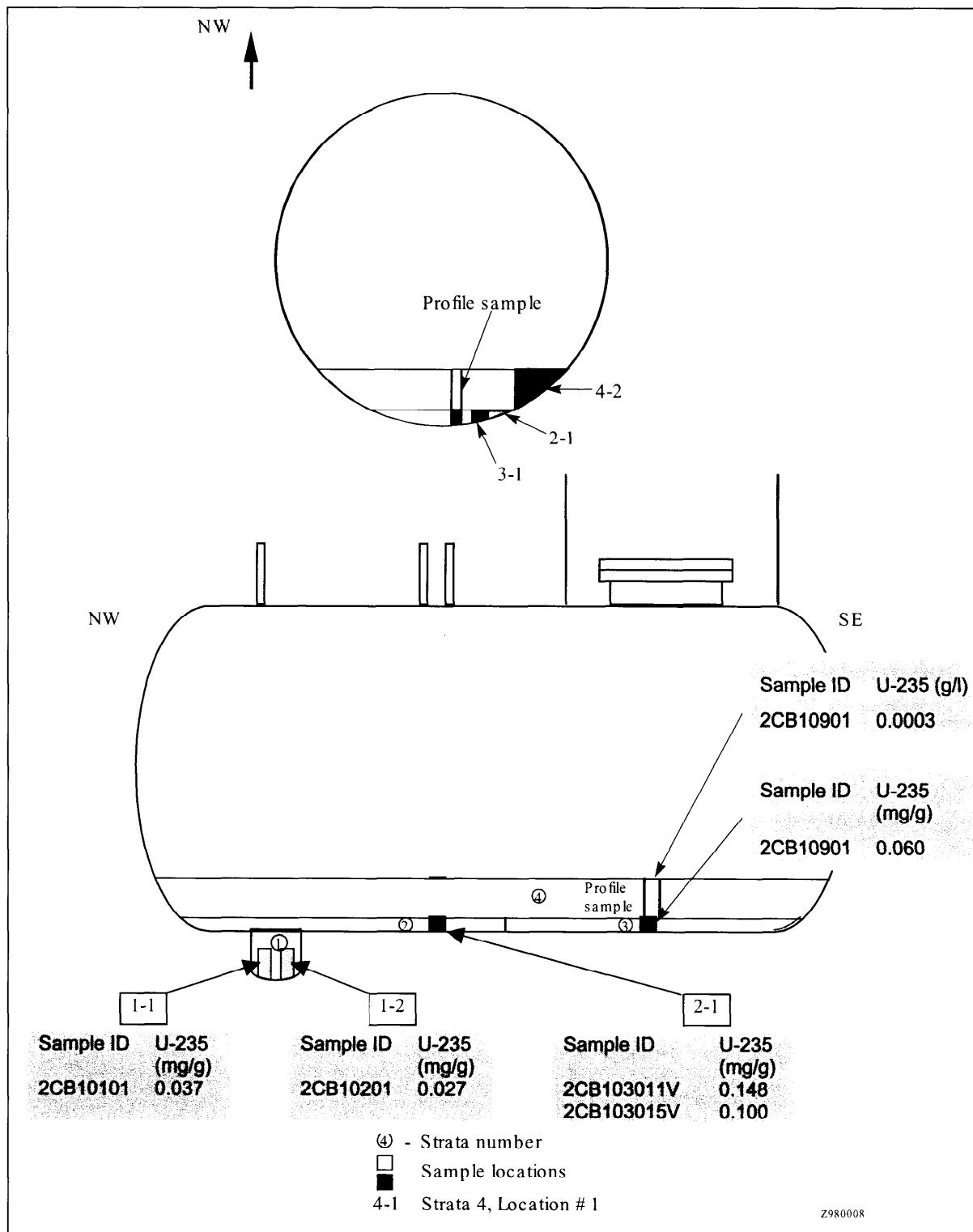


Figure H-1. 1996 Tank V-1 strata, sample locations and U-235 results.

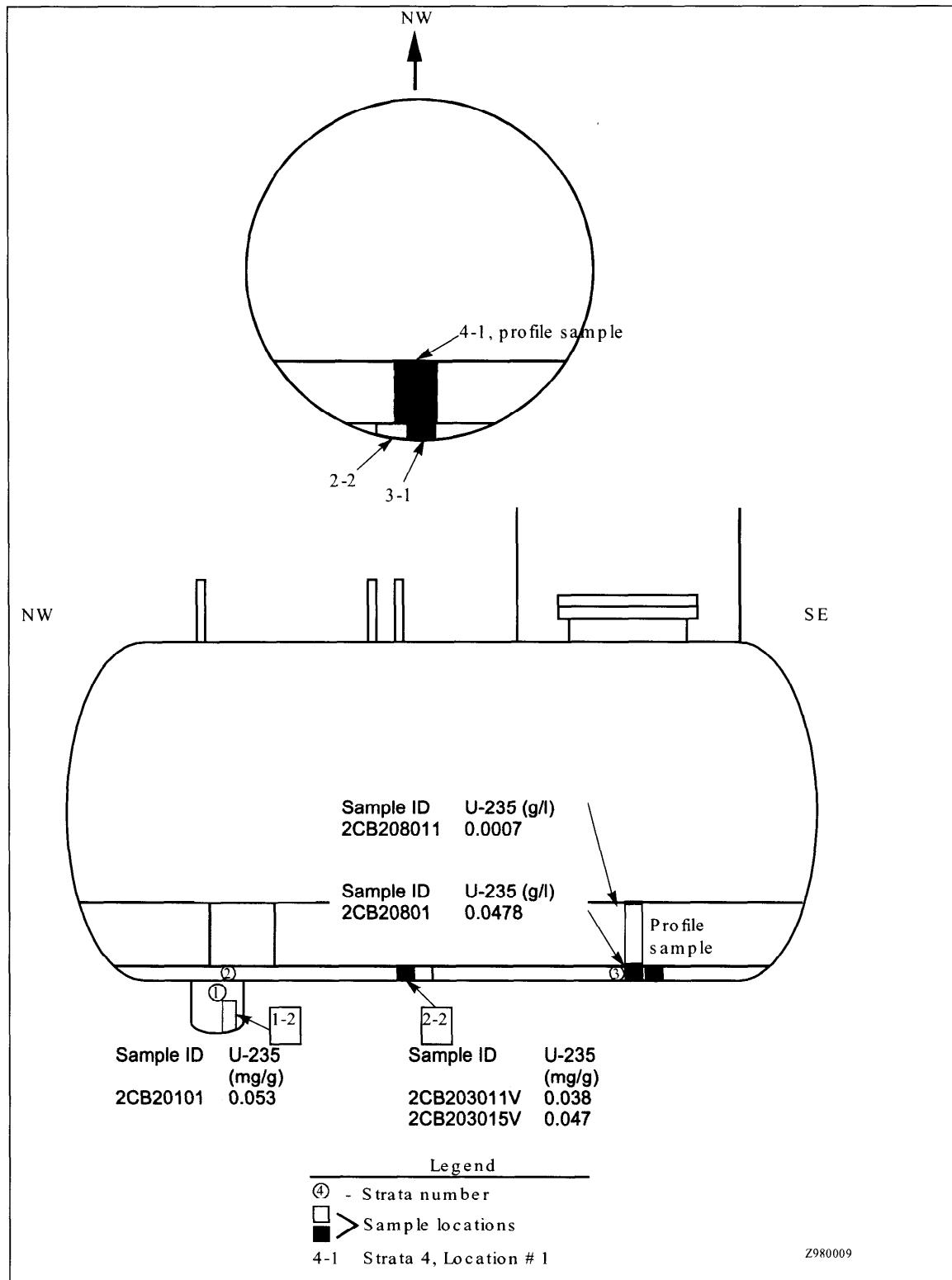


Figure H-2. 1996 Tank V-2 strata, sample locations and U-235 results.

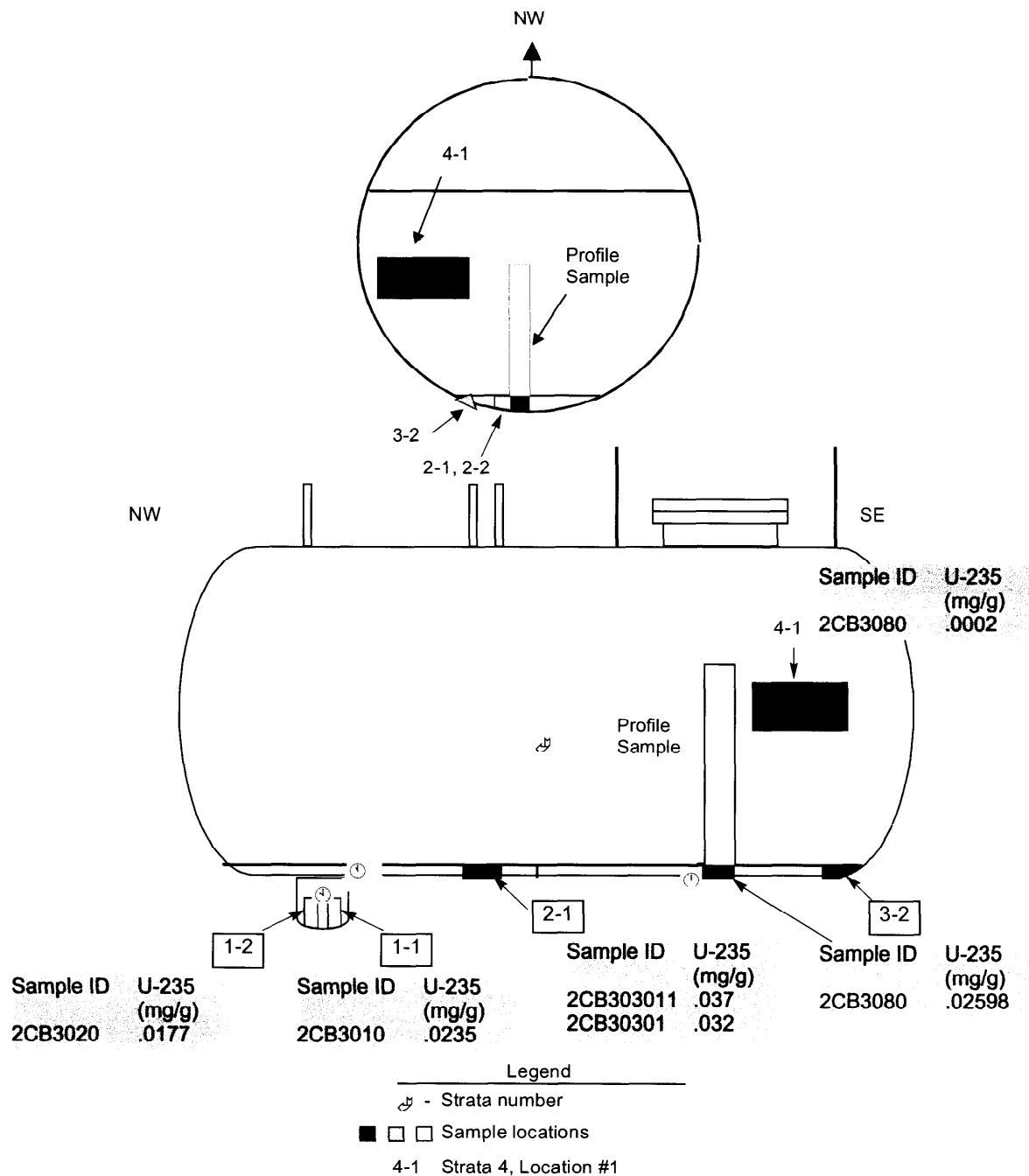


Figure H-3. 1996 Tank V-3 strata, sample locations and U-235 results.

Table H-3. 1996 radiological sampling and analysis results for the solid phase in Tank V-1.

Analyte	Activity (pCi/g) by Sample ID ^a				
	2CB101011V (1-1) ^b	2CB102011V (1-2) ^b	2CB103011V (2-1) ^b	2CB103015V (2-1) ^b	2CB109015V (profile) ^b
U-233/234	2,510 ± 94.9	1,760 ± 61	10,400 ± 554	7,270 ± 267	4,330 ± 155
U-235	78.3 ± 3.33	58.3 ± 2.28	316 ± 17.8	214 ± 8.21	130 ± 4.92
U-238	114 ± 3.93	65.4 ± 2.29	106 ± 4.74	80.6 ± 2.84	67.4 ± 2.35
Pu-238	26,100 ± 667	26,200 ± 672	23,700 ± 606	8,590 ± 223	10,700 ± 275
Pu-239/240	10,800 ± 278	11,200 ± 291	11,400 ± 293	4,600 ± 122	5,450 ± 143
Am-241	28,100 ± 743	32,800 ± 864	25,200 ± 658	9,240 ± 235	11,700 ± 326
Cm-242	U (110) ^c	U (112)	U (98)	15.2 ± 2.23	U (39.1)
Cm-243/244	8,400 ± 252	9,630 ± 287	7,260 ± 213	2,790 ± 75.1	3,470 ± 119
Np-237	U (29.9)	U (27.9)	U (21.3)	U (39.4)	U (14.7)
Sr-90	4,890,000 ± 6,610	4,040,000 ± 6,380	14,300,000 ± 11,500	6,750,000 ± 6,700	8,560,000 ± 9,450
Ag-108m	U (1,880)	U (631)	U (1,320)	U (1,010)	U (691)
Ag-110m	U (3,470)	U (1,050)	U (1,950)	U (1,920)	U (1,340)
Am-241 ^d	27,600 ± 2,820	35,600 ± 1,880	11,800 ± 4,660	6,780 ± 1,400	10,300 ± 1,220
Ce-144	U (18,400)	U (6,820)	U (21,800)	U (10,300)	U (7,190)
Co-58	U (3,700)	U (1,220)	U (4,370)	U (1,200)	U (825)
Co-60	446,000 ± 21,300	151,000 ± 7,640	368,000 ± 17,600	184,000 ± 8,790	67,000 ± 3,210
Cs-134	2,910 ± 552	2,160 ± 212	1,490 ± 644	502 ± 148	726 ± 120
Cs-137	7,260,000 ± 332,000	5,910,000 ± 272,000	15,800,000 ± 732,000	9,960,000 ± 455,000	5,100,000 ± 233,000
Eu-152	45,400 ± 5,700	52,900 ± 3,030	37,300 ± 2,300	15,200 ± 1,600	25,600 ± 1,610
Eu-154	64,300 ± 3,150	71,200 ± 3,630	53,400 ± 2,510	20,300 ± 1,000	28,200 ± 1,330
Eu-155	U (6,780)	2,700 ± 768	U (6,110)	U (3,770)	U (2,630)
Mn-54	U (1,380)	U (437)	U (1,510)	U (441)	U (282)
Nb-95	U (3,950)	U (1,300)	U (17,500)	U (1,280)	U (895)
Ra-226	U (849)	U (332)	U (1,120)	U (381)	U (336)
Ru-103	U (24,700)	U (10,200)	U (34,000)	U (13,800)	U (10,600)
Ru-106	U (22,900)	U (7,470)	U (24,200)	U (12,400)	U (8,580)
Sb-125	U (8,290)	U (3,430)	U (10,900)	U (4,680)	U (3,210)
U-235 ^c	U (3,020)	U (1,190)	U (4,000)	U (1,630)	U (1,120)
Zn-65	U (3,640)	U (1,130)	U (3,520)	U (1,160)	U (730)
Zr-95	U (7,010)	U (2,330)	U (8,740)	U (2,310)	U (1,590)
I-129	U (142)	U (43.6)	U (65.2)	U (48)	U (41.4)
Ni-63	1,980,000 ± 142,000	670,000 ± 48,200	3,310,000 ± 238,000	1,720,000 ± 124,000	725,000 ± 52,200

a. Analysis performed on solid portion of samples following gravity filtration; data validation level "C."

b. Sample location.

c. U - not detected (detection limit given in parentheses).

d. Analysis by gamma spectroscopy.

Table H-4. 1996 radiological sampling and analysis results for the solid phase in Tank V-2.

Analyte	Activity (pCi/g) by Sample ID ^a			
	2CB201011V (1-2) ^b	2CB203011V (2-2) ^b	2CB203015V (2-2) ^b	2CB208015V (profile) ^b
U-233/234	3,790 ± 142	2,660 ± 95.7	3,150 ± 115	3,350 ± 114
U-235	113 ± 4.65	81 ± 3.18	100 ± 3.99	102 ± 3.69
U-238	131 ± 4.46	51.3 ± 1.85	97 ± 3.32	74.8 ± 2.49
Pu-238	5,690 ± 149	4,440 ± 117	13,900 ± 356	7,540 ± 195
Pu-239/240	8,260 ± 215	7,500 ± 194	6,150 ± 160	4,730 ± 124
Am-241	3,520 ± 92.5	2,680 ± 70.3	2,500 ± 66.4	1,230 ± 35.6
Cm-242	3.22 ± 0.934	1.99 ± 0.631	9.46 ± 1.48	3.64 ± 1.01
Cm-243/244	161 ± 7.69	126 ± 5.90	117 ± 5.88	244 ± 10.3
Np-237	U (33.5) ^c	U (9.19)	U (37.9)	U (23.8)
Sr-90	16,500,000 ± 11,400	11,500,000 ± 8,630	10,700,000 ± 8,090	16,100,000 ± 11,300
Ag-108m	U (2,080)	753 ± 166	U (451)	U (759)
Ag-110m	U (3,910)	U (794)	U (760)	U (1,360)
Am-241 ^d	U (8,370)	3,300 ± 410	3,460 ± 410	U (3,300)
Ce-144	U (20,700)	U (4,960)	U (4,890)	U (7,470)
Co-58	U (3,730)	U (900)	U (889)	U (697)
Co-60	705,000 ± 33,600	156,000 ± 7,900	138,000 ± 6,960	75,800 ± 3,630
Cs-134	U (1,270)	316 ± 121	U (317)	U (290)
Cs-137	14,100,000 ± 645,000	6,330,000 ± 291,000	5,660,000 ± 261,000	4,870,000 ± 222,000
Eu-152	48,600 ± 3,260	2,950 ± 824	3,030 ± 825	9,930 ± 1,100
Eu-154	33,400 ± 1,850	24,400 ± 1,270	20,200 ± 1,060	146,000 ± 739
Eu-155	U (7,610)	2,580 ± 570	2,870 ± 566	U (2,930)
Mn-54	U (1,360)	U (335)	U (332)	U (299)
Nb-95	U (3,890)	U (972)	U (954)	U (728)
Ra-226	U (8,930)	U (241)	U (257)	U (373)
Ru-103	U (27,400)	U (6,960)	U (6,760)	U (6,980)
Ru-106	U (25,400)	U (5,440)	U (5,360)	U (8,860)
Sb-125	U (9,360)	U (2,450)	U (2,420)	U (3,440)
U-235 ^c	U (3,280)	U (853)	U (842)	U (1,230)
Zn-65	U (3,630)	U (775)	U (778)	U (751)
Zr-95	U (6,920)	U (1,770)	U (1,720)	U (1,280)
I-129	U (68.4)	U (115)	U (34.6)	U (57.7)
Ni-63	1,750,000 ± 126,000	557,000 ± 40,100	804,000 ± 57,900	569,000 ± 40,900

a. Analysis performed on solid portion of samples following gravity filtration; data validation level "C."

b. Sample location.

c. U - not detected (detection limit given in parentheses).

d. Analysis by gamma spectroscopy.

Table H-5. 1996 radiological sampling and analysis results for the solid phase in Tank V-3.

Analyte	Activity (pCi/g) by Sample ID ^a				
	2CB301011V (1-1) ^b	2CB302011V (1-2) ^b	2CB303011V (2-1) ^b	2CB303016V (2-1) ^b	2CB308015V (profile) ^b
U-233/234	1,380 \pm 48.3	1,110 \pm 37.1	2,430 \pm 85.9	2,180 \pm 74.7	4,060 \pm 146
U-235	50.3 \pm 2.00	38 \pm 1.44	79.2 \pm 3.09	68.9 \pm 2.55	128 \pm 4.91
U-238	64.8 \pm 2.23	50.5 \pm 1.72	79.2 \pm 2.72	61.1 \pm 2.06	85 \pm 2.93
Pu-238	15,300 \pm 393	14,600 \pm 375	11,800 \pm 303	14,200 \pm 363	10,800 \pm 278
Pu-239/240	10,000 \pm 257	7,440 \pm 193	5,370 \pm 140	6,840 \pm 177	4,810 \pm 126
Am-241	11,500 \pm 318	7,660 \pm 194	4,840 \pm 124	6,180 \pm 185	5,620 \pm 176
Cm-242	U (83.6) ^c	19.9 \pm 2.11	13.2 \pm 1.79	U (75.4)	U (47.8)
Cm-243/244	3,690 \pm 121	2,070 \pm 55.3	1,140 \pm 32.6	1,590 \pm 66	1,570 \pm 68.8
Np-237	U (23.8)	U (25.9)	U (20.0)	U (20.9)	ND ^e (57.5)
Sr-90	6,210,000 \pm 6,120	10,200,000 \pm 5,870	23,200,000 \pm 10,900	44,500,000 \pm 20,800	24,000,000 \pm 13,400
Ag-108m	U (413)	U (1,010)	U (1,360)	U (1,190)	U (777)
Ag-110m	U (711)	U (1,910)	U (2,610)	U (2,240)	U (1,030)
Am-241 ^d	13,000 \pm 734	9,460 \pm 1,710	U (6,140)	6,530 \pm 2,100	U (9,540)
Ce-144	ND (4,550)	U (10,300)	U (14,500)	U (12,500)	U (25,600)
Co-58	ND (824)	U (1,760)	U (1,620)	U (1,860)	U (2,350)
Co-60	184,000 \pm 9,270	321,000 \pm 15,300	128,000 \pm 6140	223,000 \pm 10,700	80,500 \pm 3,850
Cs-134	2,640 \pm 167	2,370 \pm 274	U (581)	897 \pm 253	1,090 \pm 320
Cs-137	6,810,000 \pm 314,000	7,450,000 \pm 341,000	8,050,000 \pm 368,000	6,630,000 \pm 303,000	9,050,000 \pm 420,000
Eu-152	28,400 \pm 1,680	29,300 \pm 2,890	8,470 \pm 1,780	12,800 \pm 2,270	12,500 \pm 812
Eu-154	37,900 \pm 1,930	33,800 \pm 1,640	26,300 \pm 1,320	30,600 \pm 1,540	28,500 \pm 1,370
Eu-155	2,320 \pm 516	U (3,860)	U (5,420)	U (4,720)	U (5,190)
Mn-54	U (294)	U (635)	U (572)	U (678)	U (815)
Nb-95	U (883)	U (1,870)	U (1,770)	U (1,960)	U (9,480)
Ra-226	U (220)	U (450)	U (523)	U (5,120)	U (8,260)
Ru-103	U (6,900)	U (13,700)	U (19,300)	U (16,300)	U (25,300)
Ru-106	U (4,940)	U (12,400)	U (16,800)	U (14,500)	U (17,900)
Sb-125	U (2,260)	U (4,560)	U (6,300)	U (5,390)	U (8,300)
U-235 ^d	U (780)	U (1,670)	U (2,230)	U (1,930)	U (4,200)
Zn-65	U (731)	U (1,690)	U (1,460)	U (1,760)	U (1,790)
Zr-95	U (1,570)	U (3,290)	U (3,140)	U (3,560)	U (6,850)
I-129	U (78.2)	U (48.3)	U (69.1)	U (108)	U (48)
Ni-63	1,770,000 \pm 128,000	1,480,000 \pm 106,000	969,000 \pm 69,800	111,000 \pm 80,200	441,000 \pm 31,800

a. Analysis performed on solid portion of samples following gravity filtration; data validation level "C."

b. Sample locations.

c. U – not detected (detection limit given in parentheses).

d. Analysis by gamma spectroscopy.

e. ND – nondetect.

Table H-6. 1996 volatile organic compound sampling and analysis results for the sediment phase in Tank V-1.

Analyte	Sample Results by Sample ID (ug/L)		
	1996 Results ^a		
	2CB10101 (1-1) ^b	2CB10201 (1-2) ^b	2CB10301 (2-1) ^b
chloromethane	UD (10,000) ^c	UD (10,000)	UD (10,000)
bromomethane	UD (10,000)	UD (10,000)	UD (10,000)
vinyl chloride	UD (10,000)	UD (10,000)	UD (10,000)
chloroethane	UD (10,000)	UD (10,000)	UD (10,000)
methylene chloride	UD (10,000)	2,700 JBD ^d	UD (10,000)
acetone	UD (10,000)	UD (10,000)	UD (10,000)
carbon disulfide	UD (10,000)	UD (10,000)	UD (10,000)
1,1-dichloroethene	UD (10,000)	UD (10,000)	UD (10,000)
1,1-dichloroethane	UD (10,000)	UD (10,000)	UD (10,000)
trans-1,2-dichloroethene	UD (10,000)	UD (10,000)	UD (10,000)
chloroform	UD (10,000)	UD (10,000)	UD (10,000)
1,2-dichloroethane	UD (10,000)	UD (10,000)	UD (10,000)
2-butanone	UD (10,000)	UD (10,000)	UD (10,000)
1,1,1-trichloroethane	UD (10,000)	UD (10,000)	UD (10,000)
carbon tetrachloride	UD (10,000)	UD (10,000)	UD (10,000)
bromodichloromethane	UD (10,000)	UD (10,000)	UD (10,000)
1,2-dichloropropane	UD (10,000)	UD (10,000)	UD (10,000)
cis-1,3-dichloropropene	UD (10,000)	UD (10,000)	UD (10,000)
trichlorethene	UD (10,000)	UD (10,000)	UD (10,000)
dibromochloromethane	UD (10,000)	UD (10,000)	UD (10,000)
1,1,2-trichloroethane	UD (10,000)	UD (10,000)	UD (10,000)
benzene	UD (10,000)	UD (10,000)	UD (10,000)
trans-1,3-dichloropropene	UD (10,000)	UD (10,000)	UD (10,000)
bromoform	UD (10,000)	UD (10,000)	UD (10,000)
4,methyl-2-pentanone	UD (10,000)	UD (10,000)	UD (10,000)
2-hexanone	UD (10,000)	UD (10,000)	UD (10,000)
tetrachloroethene	UD (10,000)	UD (10,000)	6,000 JD
1,1,2,2-tetrachlorethane	UD (10,000)	UD (10,000)	UD (10,000)
toluene	UD (10,000)	UD (10,000)	UD (10,000)
chlorobenzene	UD (10,000)	UD (10,000)	UD (10,000)

Table H-6. (continued).

Analyte	Sample Results by Sample ID (ug/L)		
	1996 Results ^a		
	2CB10101 (1-1) ^b	2CB10201 (1-2) ^b	2CB10301 (2-1) ^b
ethylbenzene	UD (10,000)	UD (10,000)	UD (10,000)
styrene	UD (10,000)	UD (10,000)	UD (10,000)
cis-1,2-dichloroethene	UD (10,000)	UD (10,000)	UD (10,000)
xylene (ortho)	UD (10,000)	UD (10,000)	UD (10,000)
xylene (total meta and para)	UD (10,000)	UD (10,000)	UD (10,000)

^{a.} VOC analysis performed on well-mixed samples containing both liquids and solids; data validation level "C."
^{b.} Sample location.
c. U - not detected (detection limit given in parentheses), D - dilution factor of 1,000.
d. J - estimated value, B - blank contamination.

Table H-7. 1996 volatile organic compound sampling and analysis results for sediment phase in Tank V-2.

Analyte	Sample Results by Sample ID (ug/L)	
	1996 Results ^a	
	2CB20101 (1-2)	2CB20301 (2-2)
chloromethane	UD (10,000) ^b	UD (10,000)
bromomethane	UD (10,000)	UD (10,000)
vinyl chloride	UD (10,000)	UD (10,000)
chloroethane	UD (10,000)	UD (10,000)
methylene chloride	UD (10,000)	UD (10,000)
acetone	UD (10,000)	UD (10,000)
carbon disulfide	UD (10,000)	UD (10,000)
1,1-dichloroethene	UD (10,000)	UD (10,000)
1,1-dichloroethane	UD (10,000)	UD (10,000)
trans-1,2-dichloroethene	UD (10,000)	UD (10,000)
chloroform	UD (10,000)	UD (10,000)
1,2-dichloroethane	UD (10,000)	UD (10,000)
2-butanone	UD (10,000)	UD (10,000)
1,1,1-trichloroethane	UD (10,000)	UD (10,000)
carbon tetrachloride	UD (10,000)	UD (10,000)
bromodichloromethane	UD (10,000)	UD (10,000)
1,2-dichloropropane	UD (10,000)	UD (10,000)
cis-1,3-dichloropropene	UD (10,000)	UD (10,000)
trichlorethene	UD (10,000)	5,900 JD ^c
dibromochloromethane	UD (10,000)	UD (10,000)
1,1,2-trichloroethane	UD (10,000)	UD (10,000)
benzene	UD (10,000)	UD (10,000)
trans-1,3-dichloropropene	UD (10,000)	UD (10,000)
bromoform	UD (10,000)	UD (10,000)
4,methyl-2-pentanone	UD (10,000)	UD (10,000)
2-hexanone	UD (10,000)	UD (10,000)
tetrachloroethene	UD (10,000)	UD (10,000)
1,1,2,2-tetrachlorethane	UD (10,000)	UD (10,000)
toluene	UD (10,000)	UD (10,000)

Table H-7. (continued).

Analyte	Sample Results by Sample ID (ug/L)	
	1996 Results ^a	
	2CB20101 (1-2)	2CB20301 (2-2)
chlorobenzene	UD (10,000)	UD (10,000)
ethylbenzene	UD (10,000)	UD (10,000)
styrene	UD (10,000)	UD (10,000)
cis-1,2-dichloroethene	UD (10,000)	UD (10,000)
xylene (ortho)	UD (10,000)	UD (10,000)
xylene (total meta and para)	UD (10,000)	UD (10,000)

^{a.} VOC analysis performed on well-mixed samples containing both liquids and solids; data validation level "C."
^{b.} U - not detected (detection limit given in parentheses), D - dilution factor of 1,000.
^{c.} J - estimated value.

Table H-8. 1996 volatile organic compound sampling and analysis results for the sediment phase in Tank V-3.

Analyte	Sample Results by Sample ID (ug/L)			
	1996 Results ^a			
	2CB30101 (1-1)	2CB30201 (1-2)	2CB30301 (2-1)	2CB303016V (2-1)
chloromethane	UD (10,000) ^b	UD (10,000)	UD (10,000)	UD (10,000)
bromomethane	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
vinyl chloride	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
chloroethane	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
methylene chloride	UD (10,000)	2,700 JBD ^b	2,000 JBD	2,100 JBD
acetone	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
carbon disulfide	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
1,1-dichloroethene	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
1,1-dichloroethane	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
trans-1,2-dichloroethene	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
chloroform	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
1,2-dichloroethane	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
2-butanone	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
1,1,1-trichloroethane	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
carbon tetrachloride	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
bromodichloromethane	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
1,2-dichloropropane	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
cis-1,3-dichloropropene	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
trichlorethene	4,100 JD	36,000 D	10,000 D	8,600 JD
dibromochloromethane	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
1,1,2-trichloroethane	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
benzene	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
trans-1,3-dichloropropene	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
bromoform	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
4-methyl-2-pentanone	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
2-hexanone	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
tetrachloroethene	UD (10,000)	2,000 JD	UD (10,000)	UD (10,000)
1,1,2,2-tetrachlorethane	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)

Table H-8. (continued).

Analyte	Sample Results by Sample ID (ug/L)			
	1996 Results ^a			
	2CB30101 (1-1)	2CB30201 (1-2)	2CB30301 (2-1)	2CB303016V (2-1)
toluene	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
chlorobenzene	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
ethylbenzene	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
styrene	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
cis-1,2-dichloroethene	UD (10,000)	4,700 JD	5,500 JD	2,600 JD
xylene (ortho)	UD (10,000)	UD (10,000)	UD (10,000)	UD (10,000)
<u>xylene (total meta and para)</u>	<u>UD (10,000)</u>	<u>UD (10,000)</u>	<u>UD (10,000)</u>	<u>UD (10,000)</u>

^a. VOC analysis performed on well-mixed samples containing both liquids and solids; data validation level "C."
b. U - not detected (detection limit given in parentheses), D - dilution factor of 1,000, J-estimated value, B-blank contamination.

Table H-9. 1996 semivolatile organic compound sampling and analysis results for the solid phase in Tank V-1.

Analyte	Concentration by Sample ID (ug/kg) ^a				
	2CB101011V (1-1) ^b	2CB102011V (1-2) ^b	2CB103011V (2-1) ^b	2CB105012V (3-1) ^b	2CB105022V (3-1) ^b
1,2,4-trichlorobenzene	U (270,000) ^c	U (240,000)	U (76,000)	U (260,000)	U (160,000)
1,2-dichlorobenzene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
1,3-dichlorobenzene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
1,4-dichlorobenzene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
2,4,5-trichlorophenol	U (1,400,000)	U (1,200,000)	U (380,000)	U (1,300,000)	U (820,000)
2,4,6-trichlorophenol	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
2,4-dichlorophenol	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
2,4-dimethylphenol	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
2,4-dinitrophenol	U (1,400,000)	U (1,200,000)	U (380,000)	U (1,300,000)	U (820,000)
2,4-dinitrotoluene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
2,6-dinitrotoluene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
2-chloronaphthalene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
2-chlorophenol	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
2-methylnaphthalene	U (270,000)	U (240,000)	7,600 J ^d	21,000 J	26,000 J
2-methylphenol	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
2-nitroaniline	U (1,400,000)	U (1,200,000)	U (380,000)	U (1,300,000)	U (820,000)
2-nitrophenol	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
3,3'-dichlorobenzidine	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
3-nitroaniline	U (1,400,000)	U (1,200,000)	U (380,000)	U (1,300,000)	U (820,000)
4,6-dinitro-2-methyphenol	U (1,400,000)	U (1,200,000)	U (380,000)	U (1,300,000)	U (820,000)
4-bromophenyl-phenylether	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
4-chloro-3-methylphenol	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
4-chloroaniline	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
4-chlorophenyl-phenylether	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
4-methylphenol	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
4-nitroaniline	U (1,400,000)	U (1,200,000)	U (380,000)	U (1,300,000)	U (820,000)
4-nitrophenol	U (1,400,000)	U (1,200,000)	U (380,000)	U (1,300,000)	U (820,000)
acenaphthene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
acenaphthylene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
anthracene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
benzo(a)anthracene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
benzo(a)pyrene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
benzo(b)fluoranthene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
benzo(g,h,i)perylene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)

Table H-9. (continued).

Analyte	Concentration by Sample ID (ug/kg) ^a				
	2CB101011V (1-1) ^b	2CB102011V (1-2) ^b	2CB103011V (2-1) ^b	2CB105012V (3-1) ^b	2CB105022V (3-1) ^b
benzo(k)fluoranthene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
benzoic acid	U (1,400,000)	U (1,200,000)	U (380,000)	U (1,300,000)	U (820,000)
Benzyl alcohol	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
butylbenzylphthalate	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
carbozole	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
chrysene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
di-n-butylphthalate	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
di-n-octylphthalate	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
Dibenz(a,h)anthracene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
dibenzofuran	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
diethylphthalate	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
dimethylphthalate	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
fluoranthene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
fluorene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
hexachlorobenzene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
hexachlorobutadiene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
hexachlorocyclopentadiene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
hexachloroethane	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
indeno(1,2,3-cd)pyrene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
isophorone	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
N-nitroso-di-n-propylamine	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
N-nitrosodiphenylamine	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
naphthalene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
nitrobenzene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
pentachlorophenol	U (1,400,000)	U (1,200,000)	U (380,000)	U (1,300,000)	U (820,000)
phenanthrene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
phenol	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
pyrene	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
pyridine	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
Bis(2-chloroethoxy)methane	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
bis(2-chloroethyl)ether	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
bis(2-chloroisopropyl)ether	U (270,000)	U (240,000)	U (76,000)	U (260,000)	U (160,000)
bis(2-ethylhexyl)phthalate	U (7,300,000) E ^e	U (5,300,000) E ^f	U (1,100,000) E ^g	U (4,200,000) E ^h	U (3,100,000) E ⁱ

a. Analysis performed on solid portion of samples following gravity filtration; method validation level "C."

b. Sample location.

c. U - not detected (detection limit in parentheses).

d. J - estimated value.

Table H-9. (continued).

Analyte	Concentration by Sample ID (ug/kg) ^a				
	2CB101011V (1-1) ^b	2CB102011V (1-2) ^b	2CB103011V (2-1) ^b	2CB105012V (3-1) ^b	2CB105022V (3-1) ^b
e. E - concentration exceeds calibration range of gas chromatography/mass spectrometry (GC/MS) instrument; result from reanalysis at a dilution factor of 10 is 17,000,000 ug/kg.					
f. Result for reanalysis at a dilution factor of 10 is 14,000,000 ug/kg.					
g. Result for reanalysis at a dilution factor of 10 is 3,600,000 ug/kg.					
h. Result for reanalysis at a dilution factor of 10 is 12,000,000 ug/kg.					
i. Result for reanalysis at a dilution factor of 10 is 5,900,000 ug/kg.					

Table H-10. 1996 semivolatile organic compound sampling and analysis results for the solid phase in Tank V-2.

Analyte	Concentration by Sample ID (ug/kg) ^a			
	2CB201011V (1-2) ^b	2CB203011V (2-2) ^b	2CB204012V (3-1) ^b	2CB204022V (3-1) ^b
1,2,4-trichlorobenzene	U (180,000) ^c	U (170,000)	U (190,000)	U (230,000)
1,2-dichlorobenzene	U (180,000)	30,000 J ^d	24,000 J	22,000 J
1,3-dichlorobenzene	U (180,000)	U (170,000)	U (190,000)	U (230,000)
1,4-dichlorobenzene	U (180,000)	U (170,000)	U (190,000)	U (230,000)
2,4,5-trichlorophenol	U (920,000)	U (870,000)	U (940,000)	U (1,100,000)
2,4,6-trichlorophenol	U (180,000)	U (170,000)	U (190,000)	U (230,000)
2,4-dichlorophenol	U (180,000)	U (170,000)	U (190,000)	U (230,000)
2,4-dimethylphenol	U (180,000)	U (170,000)	U (190,000)	U (230,000)
2,4-dinitrophenol	U (920,000)	U (870,000)	U (940,000)	U (1,100,000)
2,4-dinitrotoluene	U (180,000)	U (170,000)	U (190,000)	U (230,000)
2,6-dinitrotoluene	U (180,000)	U (170,000)	U (190,000)	U (230,000)
2-chloronaphthalene	U (180,000)	U (170,000)	U (190,000)	U (230,000)
2-chlorophenol	U (180,000)	U (170,000)	U (190,000)	U (230,000)
2-methylnaphthalene	12,000 J	38,000 J	57,000 J	38,000 J
2-methylphenol	U (180,000)	U (170,000)	U (190,000)	U (230,000)
2-nitroaniline	U (920,000)	U (870,000)	U (940,000)	U (1,100,000)
2-nitrophenol	U (180,000)	U (170,000)	U (190,000)	U (230,000)
3,3'-dichlorobenzidine	U (180,000)	U (170,000)	U (190,000)	U (230,000)
3-nitroaniline	U (920,000)	U (870,000)	U (940,000)	U (1,100,000)
4,6-dinitro-2-methyphenol	U (920,000)	U (870,000)	U (940,000)	U (1,100,000)
4-bromophenyl-phenylether	U (180,000)	U (170,000)	U (190,000)	U (230,000)
4-chloro-3-methylphenol	U (180,000)	U (170,000)	U (190,000)	U (230,000)
4-chloroaniline	U (180,000)	U (170,000)	U (190,000)	U (230,000)
4-chlorophenyl-phenylether	U (180,000)	U (170,000)	U (190,000)	U (230,000)
4-methylphenol	U (180,000)	U (170,000)	U (190,000)	U (230,000)
4-nitroaniline	U (920,000)	U (870,000)	U (940,000)	U (1,100,000)
4-nitrophenol	U (920,000)	U (870,000)	U (940,000)	U (1,100,000)
acenaphthene	U (180,000)	U (170,000)	U (190,000)	U (230,000)
acenaphthylene	U (180,000)	U (170,000)	U (190,000)	U (230,000)
anthracene	U (180,000)	U (170,000)	U (190,000)	U (230,000)
benzo(a)anthracene	U (180,000)	U (170,000)	U (190,000)	U (230,000)

Table H-10. (continued).

Analyte	Concentration by Sample ID (ug/kg) ^a			
	2CB201011V (1-2) ^b	2CB203011V (2-2) ^b	2CB204012V (3-1) ^b	2CB204022V (3-1) ^b
benzo(a)pyrene	U (180,000)	U (170,000)	U (190,000)	U (230,000)
benzo(b)fluoranthene	U (180,000)	U (170,000)	U (190,000)	U (230,000)
benzo(g,h,I)perylene	U (180,000)	U (170,000)	U (190,000)	U (230,000)
benzo(k)fluoranthene	U (180,000)	U (170,000)	U (190,000)	U (230,000)
benzoic acid	U (920,000)	U (870,000)	U (940,000)	U (1,100,000)
Benzyl alcohol	U (180,000)	U (170,000)	U (190,000)	U (230,000)
butylbenzylphthalate	U (180,000)	U (170,000)	U (190,000)	U (230,000)
carbozole	U (180,000)	U (170,000)	U (190,000)	U (230,000)
chrysene	U (180,000)	U (170,000)	U (190,000)	U (230,000)
di-n-butylphthalate	U (180,000)	U (170,000)	U (190,000)	U (230,000)
di-n-octylphthalate	U (180,000)	U (170,000)	U (190,000)	U (230,000)
Dibenz(a,h)anthracene	U (180,000)	U (170,000)	U (190,000)	U (230,000)
dibenzofuran	U (180,000)	U (170,000)	U (190,000)	U (230,000)
diethylphthalate	U (180,000)	U (170,000)	U (190,000)	U (230,000)
dimethylphthalate	U (180,000)	U (170,000)	U (190,000)	U (230,000)
fluoranthene	U (180,000)	U (170,000)	U (190,000)	U (230,000)
fluorene	U (180,000)	U (170,000)	U (190,000)	U (230,000)
hexachlorobenzene	U (180,000)	U (170,000)	U (190,000)	U (230,000)
hexachlorobutadiene	U (180,000)	U (170,000)	U (190,000)	U (230,000)
Hexachlorocyclopentadiene	U (180,000)	U (170,000)	U (190,000)	U (230,000)
hexachloroethane	U (180,000)	U (170,000)	U (190,000)	U (230,000)
Indeno(1,2,3-cd)pyrene	U (180,000)	U (170,000)	U (190,000)	U (230,000)
isophorone	U (180,000)	U (170,000)	U (190,000)	U (230,000)
N-nitroso-di-n-propylamine	U (180,000)	U (170,000)	U (190,000)	U (230,000)
N-nitrosodiphenylamine	U (180,000)	U (170,000)	U (190,000)	U (230,000)
naphthalene	U (180,000)	U (170,000)	14,000 J	U (230,000)
nitrobenzene	U (180,000)	U (170,000)	U (190,000)	U (230,000)
pentachlorophenol	U (920,000)	U (870,000)	U (940,000)	U (1,100,000)
phenanthrene	U (180,000)	U (170,000)	U (190,000)	U (230,000)
Phenol	U (180,000)	U (170,000)	U (190,000)	U (230,000)
Pyrene	U (180,000)	U (170,000)	U (190,000)	U (230,000)
pyridine	U (180,000)	U (170,000)	U (190,000)	U (230,000)

Table H-10. (continued).

Analyte	Concentration by Sample ID (ug/kg) ^a			
	2CB201011V (1-2) ^b	2CB203011V (2-2) ^b	2CB204012V (3-1) ^b	2CB204022V (3-1) ^b
bis(2-chloroethoxy)methane	U (180,000)	U (170,000)	U (190,000)	U (230,000)
bis(2-chloroethyl)ether	U (180,000)	U (170,000)	U (190,000)	U (230,000)
bis(2-chloroisopropyl)ether	U (180,000)	U (170,000)	U (190,000)	U (230,000)
bis(2-ethylhexyl)phthalate	U (4,100,000) E ^c	U (2,500,000) E ^f	1,500,000	1,500,000

a. Analysis performed on solid portion of samples following gravity filtration; data validation level "C."
 b. Sample location.
 c. U - not detected (detection limit in parentheses).
 d. J - estimated value.
 e. E - concentration exceeds calibration range of GC/MS instrument; result from reanalysis at a dilution factor of 10 is 7,000,000 ug/kg.
 f. Result for reanalysis at a dilution factor of 10 is 11,000,000 ug/kg.

Table H-11. 1996 semivolatile organic compound sampling and analysis results for the solid phase in Tank V-3.

Analyte	Concentration by Sample ID (ug/kg) ^a			
	2CB301011V (1-1) ^b	2CB302011V (1-2) ^b	2CB303011V (2-1) ^b	2CB303016V (2-1) ^b
1,2,4-trichlorobenzene	U (170,000) ^c	U (100,000)	U (270,000)	U (180,000)
1,2-dichlorobenzene	16,000 J ^d	11,000 J	50,000 J	26,000 J
1,3-dichlorobenzene	U (170,000)	U (100,000)	U (270,000)	U (180,000)
1,4-dichlorobenzene	U (170,000)	U (100,000)	U (270,000)	U (180,000)
2,4,5-trichlorophenol	U (870,000)	U (500,000)	U (1,300,000)	U (890,000)
2,4,6-trichlorophenol	U (170,000)	U (100,000)	U (270,000)	U (180,000)
2,4-dichlorophenol	U (170,000)	U (100,000)	U (270,000)	U (180,000)
2,4-dimethylphenol	U (170,000)	U (100,000)	U (270,000)	U (180,000)
2,4-dinitrophenol	U (870,000)	U (500,000)	U (1,300,000)	U (890,000)
2,4-dinitrotoluene	U (170,000)	U (100,000)	U (270,000)	U (180,000)
2,6-dinitrotoluene	U (170,000)	U (100,000)	U (270,000)	U (180,000)
2-chloronaphthalene	U (170,000)	U (100,000)	U (270,000)	U (180,000)
2-chlorophenol	U (170,000)	U (100,000)	U (270,000)	U (180,000)
2-methylnaphthalene	16,000 J	9,900 J	32,000 J	15,000 J
2-methylphenol	U (170,000)	U (100,000)	U (270,000)	U (180,000)
2-nitroaniline	U (870,000)	U (500,000)	U (1,300,000)	U (890,000)
2-nitrophenol	U (170,000)	U (100,000)	U (270,000)	U (180,000)
3,3'-dichlorobenzidine	U (170,000)	U (100,000)	U (270,000)	U (180,000)
3-nitroaniline	U (870,000)	U (500,000)	U (1,300,000)	U (890,000)
4,6-dinitro-2-methyphenol	U (870,000)	U (500,000)	U (1,300,000)	U (890,000)
4-bromophenyl-phenylether	U (170,000)	U (100,000)	U (270,000)	U (180,000)
4-chloro-3-methylphenol	U (170,000)	U (100,000)	U (270,000)	U (180,000)
4-chloroaniline	U (170,000)	U (100,000)	U (270,000)	U (180,000)
4-chlorophenyl-phenylether	U (170,000)	U (100,000)	U (270,000)	U (180,000)
4-methylphenol	U (170,000)	U (100,000)	U (270,000)	U (180,000)
4-nitroaniline	U (870,000)	U (500,000)	U (1,300,000)	U (890,000)
4-nitrophenol	U (870,000)	U (500,000)	U (1,300,000)	U (890,000)
acenaphthene	U (170,000)	U (100,000)	U (270,000)	U (180,000)
acenaphthylene	U (170,000)	U (100,000)	U (270,000)	U (180,000)
anthracene	U (170,000)	U (100,000)	U (270,000)	U (180,000)
benzo(a)anthracene	U (170,000)	U (100,000)	U (270,000)	U (180,000)

Table H-11. (continued).

Analyte	Concentration by Sample ID (ug/kg) ^a			
	2CB301011V (1-1) ^b	2CB302011V (1-2) ^b	2CB303011V (2-1) ^b	2CB303016V (2-1) ^b
benzo(a)pyrene	U (170,000) ^c	U (100,000)	U (270,000)	U (180,000)
benzo(b)fluoranthene	U (170,000)	U (100,000)	U (270,000)	U (180,000)
benzo(g,h,I)perylene	U (170,000)	U (100,000)	U (270,000)	U (180,000)
benzo(k)fluoranthene	U (170,000)	U (100,000)	U (270,000)	U (180,000)
benzoic acid	U (870,000)	U (500,000)	U (1,300,000)	U (890,000)
benzyl alcohol	U (170,000)	U (100,000)	U (270,000)	U (180,000)
butylbenzylphthalate	U (170,000)	U (100,000)	U (270,000)	U (180,000)
carbozole	U (170,000)	U (100,000)	U (270,000)	U (180,000)
chrysene	U (170,000)	U (100,000)	U (270,000)	U (180,000)
di-n-butylphthalate	U (170,000)	U (100,000)	U (270,000)	U (180,000)
di-n-octylphthalate	U (170,000)	U (100,000)	U (270,000)	U (180,000)
dibenz(a,h)anthracene	U (170,000)	U (100,000)	U (270,000)	U (180,000)
dibenzofuran	U (170,000)	U (100,000)	U (270,000)	U (180,000)
diethylphthalate	U (170,000)	U (100,000)	U (270,000)	U (180,000)
dimethylphthalate	U (170,000)	U (100,000)	U (270,000)	U (180,000)
fluoranthene	U (170,000)	U (100,000)	U (270,000)	U (180,000)
fluorene	U (170,000)	U (100,000)	U (270,000)	U (180,000)
hexachlorobenzene	U (170,000)	U (100,000)	U (270,000)	U (180,000)
hexachlorobutadiene	U (170,000)	U (100,000)	U (270,000)	U (180,000)
hexachlorocyclopentadiene	U (170,000)	U (100,000)	U (270,000)	U (180,000)
hexachloroethane	U (170,000)	U (100,000)	U (270,000)	U (180,000)
indeno(1,2,3-cd)pyrene	U (170,000)	U (100,000)	U (270,000)	U (180,000)
isophorone	U (170,000)	U (100,000)	U (270,000)	U (180,000)
N-nitroso-di-n-propylamine	U (170,000)	U (100,000)	U (270,000)	U (180,000)
N-nitrosodiphenylamine	U (170,000)	U (100,000)	U (270,000)	U (180,000)
naphthalene	U (170,000)	U (100,000)	U (270,000)	U (180,000)
nitrobenzene	U (170,000)	U (100,000)	U (270,000)	U (180,000)
pentachlorophenol	U (870,000)	U (500,000)	U (1,300,000)	U (890,000)
phenanthrene	U (170,000)	U (100,000)	U (270,000)	U (180,000)
phenol	U (170,000)	U (100,000)	U (270,000)	U (180,000)
pyrene	U (170,000)	U (100,000)	U (270,000)	U (180,000)
pyridine	U (170,000)	U (100,000)	U (270,000)	U (180,000)
bis(2-chloroethoxy)methane	U (170,000)	U (100,000)	U (270,000)	U (180,000)

Table H-11. (continued).

Analyte	Concentration by Sample ID (ug/kg) ^a			
	2CB301011V (1-1) ^b	2CB302011V (1-2) ^b	2CB303011V (2-1) ^b	2CB303016V (2-1) ^b
bis(2-chloroethyl)ether	U (170,000)	U (100,000)	U (270,000)	U (180,000)
bis(2-chloroisopropyl)ether	U (170,000)	U (100,000)	U (270,000)	U (180,000)
bis(2-ethylhexyl)phthalate	U (3,800,000) E ^e	U (1,400,000) E ^f	U (2,900,000) E ^g	U (2,100,000) E ^h

a. Analysis performed on solid portion of samples following gravity filtration; validation level "C."
 b. Sample locations.
 c. U - not detected (detection limit in parentheses).
 d. J - estimated value.
 e. E - concentration exceeds calibration range of GC/MS instrument; result from reanalysis at a dilution factor of 10 is 9,600,000 ug/kg.
 f. Result for reanalysis at a dilution factor of 10 is 12,000,000 ug/kg.
 g. Result for reanalysis at a dilution factor of 10 is 12,000,000 ug/kg.
 h. Result for reanalysis at a dilution factor of 10 is 8,400,000 ug/kg.

Table H-12. 1996 polychlorinated biphenyl (PCB) sampling and analysis results for the solid phase in Tank V-1.

Analyte	Concentration by Sample ID ($\mu\text{g/kg}$) ^a				
	2CB101011V (1-1) ^{b,c}	2CB102011V (1-2) ^{b,d}	2CB103011V (2-1) ^{b,d}	2CB105012V (3-1) ^{b,d}	2CB105022V (3-1) ^{b,c}
Aroclor-1016	U (55,000) ^e	U (27,000)	U (13,000)	U (25,000)	U (34,000)
Aroclor-1221	U (110,000)	U (54,000)	U (25,000)	U (50,000)	U (68,000)
Aroclor-1232	U (55,000)	U (27,000)	U (13,000)	U (25,000)	U (34,000)
Aroclor-1242	U (55,000)	U (27,000)	U (13,000)	U (25,000)	U (34,000)
Aroclor-1248	U (55,000)	U (27,000)	U (13,000)	U (25,000)	U (34,000)
Aroclor-1254	U (55,000)	U (27,000)	U (13,000)	U (25,000)	U (34,000)
Aroclor-1260	<u>660,000</u>	<u>510,000</u>	<u>150,000</u>	<u>340,000</u>	<u>310,000</u>

a. Analysis performed on solid portion of samples following phase separation; data validation level "C."
 b. Sample location.
 c. Dilution factor of 20.
 d. Dilution factor of 10.
 e. U - not detected (detection limit given in parentheses).

Table H-13. 1996 polychlorinated biphenyl (PCB) sampling and analysis results for the solid phase in Tank V-2.

Analyte	Concentration by Sample ID (ug/kg) ^a			
	2CB201011V (1-2) ^{b,c}	2CB203011V (2-2) ^{b,c}	2CB204012V (3-1) ^{b,c}	2CB204022V (3-1) ^{b,c}
Aroclor-1016	U (19,000) ^d	U (20,000)	U (13,000)	U (19,000)
Aroclor-1221	U (37,000)	U (39,000)	U (26,000)	U (38,000)
Aroclor-1232	U (19,000)	U (20,000)	U (13,000)	U (19,000)
Aroclor-1242	U (19,000)	U (20,000)	U (13,000)	U (19,000)
Aroclor-1248	U (19,000)	U (20,000)	U (13,000)	U (19,000)
Aroclor-1254	U (19,000)	U (20,000)	U (13,000)	U (19,000)
Aroclor-1260	<u>200,000</u>	250,000	160,000	260,000

a. Analysis performed on solid portion of samples following gravity filtration; data validation level "C."
 b. Sample location.
 c. Dilution factor of 10.
 d. U - not detected (detection limit given in parentheses).

Table H-14. 1996 polychlorinated biphenyl (PCB) sampling and analysis results for the solid phase in Tank V-3.

Analyte	Concentration by Sample ID (ug/kg) ^a			
	2CB301011V (1-1) ^{b,c}	2CB302011V (1-2) ^{b,c}	2CB303011V (2-1) ^{b,d}	2CB303016V (2-1) ^{b,d}
Aroclor-1016	U (35,000) ^e	U (44,000)	U (21,000)	U (19,000)
Aroclor-1221	U (69,000)	U (88,000)	U (41,000)	U (37,000)
Aroclor-1232	U (35,000)	U (44,000)	U (21,000)	U (19,000)
Aroclor-1242	U (35,000)	U (44,000)	U (21,000)	U (19,000)
Aroclor-1248	U (35,000)	U (44,000)	U (21,000)	U (19,000)
Aroclor-1254	U (35,000)	U (44,000)	U (21,000)	U (19,000)
Aroclor-1260	370,000	400,000	210,000	260,000

a. Analysis performed on solid portion of samples following gravity filtration; data validation level "C."
 b. Sample location.
 c. Dilution factor of 20.
 d. Dilution factor of 10.
 e. U - not detected (detection limit given in parentheses).

Table H-15. 1996 inorganic sampling and analysis results for the solid phase in Tank V-1.

Analyte	Concentration by Sample ID (mg/kg)		
	1996 Results ^a		
	2CB101011V (1-1)	2CB102011V (1-2)	2CB103011V (2-1)
Aluminum	4,050 D ^b	4,200	10,300 D
Antimony	17.3	30	30.6 B ^b
Arsenic	13.5	18.8	13.1 B
Barium	139	131	385
Beryllium	16.3	18.6	91.2
Boron	93.7	127	341
Cadmium	66.2	70.5	170
Calcium	23,000 D	23,120 D	6,320
Chromium	786	845	1,740
Cobalt	8.85	10.3	10.8
Copper	345	357	1,210
Iron	24,400	23,400	35,600
Lead	1,090	1,130	1,640
Magnesium	3,060	3,240	16,100 D
Manganese	3,220	2,910 D	10,500 D
Mercury	1,590 YE ^b	830 Y	688 Y
Nickel	346	352	534
Potassium	1,050	1,140	7,000
Selenium	U (2.25) ^c	U (2.98)	U (2.72)
Silica	303	678	371
Silver	87.4	0.36	446
Sodium	1,010	1,280	5,610
Thallium	U (19)	U (25.1)	U (22.9)
Tin	69.9 B	95.4 B	112
Vanadium	6.35 B	8.68 B	9.11 B
Zinc	24,700 D	27,000 D	15,400 D

a. Analysis performed on solid portion of samples following gravity filtration; data validation level "C."

b. D - dilution factor of 10, J - estimated value, B - reported value is greater than or equal to the instrument detection limit but less than the contract required detection limit, Y - laboratory defined flag, E - reported value is estimated due to the presence of interference.

c. U - not detected (detection limit given in parentheses).

Table H-16. 1996 inorganic sampling and analysis results for the solid phase in Tank V-2.

Analyte	Concentration by Sample ID (mg/kg)	
	1996 Results ^a	
	2CB201011V (1-2)	2CB203011V (2-2)
Aluminum	6,130 D ^b	4,080 D
Antimony	25.9 B ^b	20 B
Arsenic	18.5 B	11.1 B
Barium	187	138
Beryllium	22	13.8
Boron	31.2 B	19.5 B
Cadmium	108	86.7
Calcium	38,600 D	29,500 D
Chromium	1,680	1,030
Cobalt	7.41 B	6.42 B
Copper	734	837
Iron	22,400	17,200
Lead	1,550	1,050
Magnesium	7,000	7,030 D
Manganese	25,400	27,100 D
Mercury	612 Y ^b	381 Y
Nickel	385	264
Potassium	2,670	1,770
Selenium	7.80 B	2.74 B
Silica	364	522
Silver	118	315
Sodium	1,740	1,270
Thallium	U (23.6) ^c	U (18.8)
Tin	46.7 B	35.7 B
Vanadium	U (0.96)	U (0.76)
Zinc	2,130	1,450

a. Analysis performed on solid portion of samples following gravity filtration; data validation level "A."

b. D - dilution factor of 10, J - estimated value, B - reported value is greater than or equal to the instrument detection limit but less than the contract required detection limit, R - data rejected during data validation and unusable, Y - laboratory defined flag, N - spiked sample recovery was not within control limits.

c. U - not detected (detection limit given in parentheses).

Table H-17. 1996 inorganic sampling and analysis results for the solid phase in Tank V-3.

Analyte	Concentration by Sample ID (mg/kg)			
	1996 Results ^a			
	2CB301011V (1-1)	2CB302011V (1-2)	2CB303011V (2-1)	2CB303016V (2-1)
Aluminum	4,670 D ^b	5,220 D	3,820 D	5,470 D
Antimony	11 B ^b	15 B	11.5 B	17.9 B
Arsenic	19	12.2 B	7.68 B	10.8 B
Barium	148	158	184	175
Beryllium	15.1	17.9	23.4	29.7
Boron	28.4 B	32.8 B	38.5	42.8 B
Cadmium	71.8	80.3	61.3	81.4
Calcium	22,100	36,800 D	29,900 D	36,500 D
Chromium	641	947	619	807
Cobalt	7.40 B	8.22	4.58 B	9.41
Copper	289	287	206	211
Iron	17,700	18,900	12,200	17,200
Lead	1,370	1,210	696	930
Magnesium	3,650	6,680 D	6,640	8,480
Manganese	8,710 D	10,200	6,800	7,210
Mercury	1,390 YE ^b	820 Y	345 Y	429 Y
Nickel	198	418	334	425
Potassium	811	822	1,080	1350
Selenium	U (2.09) ^c	U (2.38)	U (2.20)	U (2.69)
Silica	544	287	337	518
Silver	42.8	48.7	198	113
Sodium	453	1,070	2,010	2,440
Thallium	U (17.6)	U (20.1)	U (19.0)	U (2.27)
Tin	60.3 B	55.1 B	36.1 B	42.7 B
Vanadium	10.8	6.43 B	2.06 B	5.78
Zinc	9,730	5,880	2,560	3,440 D

a. Analysis performed on solid portion of samples following gravity filtration; data validation level "C."

b. D - dilution factor of 10, J - estimated value, B - reported value is greater than or equal to the instrument detection limit but less than the contract required detection limit, R - result rejected during validation and unusable, Y - laboratory defined flag, E - reported value is estimated due to the presence of interference.

c. U - not detected (detection limit given in parentheses).

Table H-18. 1996 miscellaneous sampling and analysis results for the solid phase in Tank V-1.

Analyte	Concentration by Sample ID ^{a,c}				
	2CB101011V (1-1) ^b	2CB102011V (1-2) ^b	2CB103011V (2-1) ^b	2CB105012V (3-1) ^b	2CB105022V (3-1) ^b
Bromide	3.96	U (10) ^d	7.25	2.92	2.65
Chloride	153 B ^e	9.6 B	760	123	100
Fluoride	U (5)	U (5)	U (5)	U (5)	U (5)
Nitrate	U (2)	U (2)	U (2)	U (2)	U (2)
Nitrite	U (4)	U (4)	U (4)	U (4)	U (4)
Phosphate	2.38	U (3)	U (3)	17.1 B	25.4
Sulfate	619 B	2540	571	258 B	85.4
Total Carbon	78,900	85,800	92,900	84,300	79,100
Total Halides	745	361	474	561	473
density (solid)	1	0.694	0.846	0.849	0.928
density (total)	1.01	1.02	1.02	NA ^f	NA
pH	7.14	7.81	8.06 (8.14) ^g	NA	NA

a. Anion, total carbon, and total halide concentrations are in units of mg/kg, density is in units of g/mL, and pH is unitless.

b. Sample location.

c. Analysis performed on solid portion of samples following gravity filtration; data validation level "C."

d. U - not detected (detection limit given in parentheses).

e. B - reported value is greater than or equal to the instrument detection limit but less than the contract required detection limit.

f. NA - not analyzed.

g. Result from analysis of laboratory duplicate.

Table H-19. 1996 miscellaneous sampling and analysis results for the solid phase in Tank V-2.

Analyte	Concentration by Sample ID ^{a,b}			
	2CB201011V (1-2) ^{c,d}	2CB203011V (2-2) ^e	2CB204012V (3-1) ^e	2CB204022V (3-1) ^e
Bromide	1.22	U (10) ^e	U (10)	U (10)
Chloride	136	73.2	47.5	43.9
Fluoride	U (5)	U (5)	U (5)	U (5)
Nitrate	U (2)	U (2)	U (2)	U (2)
Nitrite	U (4)	U (4)	U (4)	U (4)
Phosphate	21.1	15	17.6 B ^f	10.9
Sulfate	5.56 B	106	186	20.2 B
Total Carbon	184,000	79,800	200,000	107,000
Total Halides	394	455	1240	1000
density (solid)	0.904	0.803	0.764	0.887
density (total)	1.03	1.01	1.02	NA ^g
pH	7.61	7.91	NA	NA

- a. Anion, total carbon and total halide concentrations are in units of mg/kg, density is in units of g/mL, and pH is unitless.
- b. Analysis performed on solid portion of samples following gravity filtration; data validation level "C."
- c. Sample location.
- d. Anion results for sample ID 2CB201011V reported in mg/L.
- e. U - not detected (detection limit given in parentheses).
- f. B - reported value is greater than or equal to the instrument detection limit but less than the contract required detection limit.
- g. NA - not analyzed.

Table H-20. 1996 miscellaneous sampling and analysis results for the solid phase in Tank V-3.

Analyte	Concentration by Sample ID ^{a,b}				
	2CB301011V (1-1) ^c	2CB302011V (1-2) ^c	2CB303011V (2-1) ^c	2CB303016V (2-1) ^c	2CB306017V (3-2) ^c
Bromide	U (10) ^d	U (10)	U (10)	U (10)	NA ^e
Chloride	64.3	60.1	54.8	55.6	NA
Fluoride	U (5)	U (5)	U (5)	U (5)	NA
Nitrate	U (2)	U (2)	U (2)	U (2)	NA
Nitrite	U (4)	U (4)	U (4)	U (4)	NA
Phosphate	U (3)	U (3)	U (3)	U (3)	NA
Sulfate	332	112 B ^f	25.9 B	33.5 B	NA
Total Carbon	937,000	110,000	113,000	NA	144,000
Total Halides	806	564	723	NA	1,320
density (solid)	0.695	0.879	1.02	NA	1.02
density (total)	1.01	1.02	1.02	NA	1.02
pH	7.41	7.08	7.86	NA	NA

a. Anion, total carbon, and total halide concentrations are in units of mg/kg, density is in units of g/mL, and pH is unitless.

b. Analysis performed on solid portion of samples following gravity filtration; data validation level "C."

c. Sample location.

d. U - not detected (detection limit given in parentheses).

d. NA - not analyzed.

e. B - reported value is greater than or equal to the instrument detection limit but less than the contract required detection limit.

Table H-21. 1996 radiological sampling and analysis results for the liquids in Tanks V-1, V-2, and V-3.

Analyte	Activity (pCi/L) by Sample ID ^a			
	2CB109015V (V-1) ^b	2CB208015V (V-2) ^b	2CB308015V (V-3) ^b	2CB307018V (V-3) ^b
U-233/234	18,900 \pm 643	38,600 \pm 1,300	13,300 \pm 443	NA ^c
U-235	566 \pm 21.8	1,600 \pm 56.2	401 \pm 15.2	NA
U-238	210 \pm 8.91	499 \pm 17.6	135 \pm 5.97	NA
Pu-238	224 \pm 10.5	475 \pm 17.3	38.3 \pm 3.35	NA
Pu-239/240	105 \pm 6.64	283 \pm 12	19.7 \pm 2.36	NA
Am-241	197 \pm 9.21	58.9 \pm 4.88	31.8 \pm 3.16	NA
Cm-242	U (8.61) ^d	U (4.96)	U (6.18)	NA
Cm-243/244	64.2 \pm 4.72	16.2 \pm 2.48	U (6.28)	NA
Np-237	U (26.7)	U (27.6)	U (36.4)	NA
Sr-90	2,030,000 \pm 9,010	4,900,000 \pm 17,400	12,300,000 \pm 21,900	NA
Ag-108m	U (776)	U (3,960)	U (890)	U (343)
Ag-110m	U (1,270)	U (7,120)	U (1,450)	U (906)
Am-241 ^e	U (1,350)	U (15,900)	U (1,780)	U (1,830)
Ce-144	ND (7,530)	U (37,800)	U (9,100)	U (3,000)
Co-58	ND (2,160)	U (1,600)	U (2,060)	U (284)
Co-60	15,500 \pm 848	13,000 \pm 799	14,800 \pm 829	4,480 \pm 252
Cs-134	U (734)	U (764)	U (726)	449 \pm 52.7
Cs-137	2,900,000 \pm 134,000	13,500,000 \pm 617,000	4,230,000 \pm 195,000	1,560,000 \pm 102,000
Eu-152	U (4,860)	U (4,760)	U (4,630)	U (693)
Eu-154	U (1,660)	U (1,820)	U (1,530)	U (213)
Eu-155	U (2,420)	U (14,400)	U (3,020)	U (1,170)
Mn-54	U (755)	U (716)	U (748)	U (106)
Nb-95	U (2,400)	U (1,960)	U (2,220)	U (319)
Ra-226	U (1,260)	U (4,100)	U (1,220)	U (332)
Ru-103	U (12,900)	U (36,000)	U (13,600)	U (5,640)
Ru-106	U (9,430)	U (46,200)	U (10,500)	U (4,080)
Sb-125	U (3,870)	U (18,400)	U (4,600)	U (1,900)
U-235 ^d	U (1,340)	U (6,450)	U (1,660)	U (533)
Zn-65	U (1,730)	U (1,700)	U (1,640)	U (237)
Zr-95	U (4,300)	U (3,210)	U (4,000)	ND (549) ^f
I-129	U (252)	U (169)	U (218)	U (108)
H-3	30,400,000 \pm 3,160,000	102,000,000 \pm 10,700,000	6,090,000 \pm 633,000	NA
Ni-63	288,000 \pm 20,700	448,000 \pm 32,300	205,000 \pm 14,800	NA

Table H-21. (continued).

Analyte	Activity (pCi/L) by Sample ID ^a			
	2CB109015V (V-1) ^b	2CB208015V (V-2) ^b	2CB308015V (V-3) ^b	2CB307018V (V-3) ^b
a.	Analysis performed on liquid portion of samples following gravity filtration; data validation level "C."			
b.	Tank identification.			
c.	Not analyzed.			
d.	U - not detected (detection limit given in parentheses).			
e.	Analysis by gamma spectroscopy.			
f.	ND – nondetect.			

Table H-22. 1996 semivolatile organic compound sampling and analysis results for the liquid phase in Tanks V-1, V-2, and V-3.

Analyte	Concentration by Sample ID (ug/L) ^a				
	2CB101014V (V-1) ^b	2CB108014V (V-1) ^b	2CB201014V (V-2) ^b	2CB206014V (V-2) ^b	2CB307018V (V-3) ^b
1,2,4-trichlorobenzene	U (1,000) ^c	U (1,000)	U (1,000)	U (1,000)	U (1,000)
1,2-dichlorobenzene	U (1,000)	U (1,000)	U (1,000)	57 J ^d	U (1,000)
1,3-dichlorobenzene	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
1,4-dichlorobenzene	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
2,4,5-trichlorophenol	U (5,000)	U (5,000)	U (5,000)	U (5,000)	U (5,000)
2,4,6-trichlorophenol	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
2,4-dichlorophenol	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
2,4-dimethylphenol	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
2,4-dinitrophenol	U (5,000)	U (5,000)	U (5,000)	U (5,000)	U (5,000)
2,4-dinitrotoluene	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
2,6-dinitrotoluene	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
2-chloronaphthalene	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
2-chlorophenol	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
2-methylnaphthalene	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
2-methylphenol	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
2-nitroaniline	U (5,000)	U (5,000)	U (5,000)	U (5,000)	U (5,000)
2-nitrophenol	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
3,3'-dichlorobenzidine	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
3-nitroaniline	U (5,000)	U (5,000)	U (5,000)	U (5,000)	U (5,000)
4,6-dinitro-2-methyphenol	U (5,000)	U (5,000)	U (5,000)	U (5,000)	U (5,000)
4-bromophenyl-phenylether	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
4-chloro-3-methylphenol	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
4-chloroaniline	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
4-chlorophenyl-phenylether	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
4-methylphenol	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
4-nitroaniline	U (5,000)	U (5,000)	U (5,000)	U (5,000)	U (5,000)
4-nitrophenol	U (5,000)	U (5,000)	U (5,000)	U (5,000)	U (5,000)
acenaphthene	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
acenaphthylene	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
anthracene	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
benzo(a)anthracene	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
benzo(a)pyrene	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)

Table H-22. (continued).

Analyte	Concentration by Sample ID (ug/L) ^a				
	2CB101014V (V-1) ^b	2CB108014V (V-1) ^b	2CB201014V (V-2) ^b	2CB206014V (V-2) ^b	2CB307018V (V-3) ^b
benzo(b)fluoranthene	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
benzo(g,h,I)perylene	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
benzo(k)fluoranthene	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
benzoic acid	U (5,000)	U (5,000)	U (5,000)	U (5,000)	U (5,000)
benzyl alcohol	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
butylbenzylphthalate	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
carbozole	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
chrysene	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
di-n-butylphthalate	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
di-n-octylphthalate	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
dibenz(a,h)anthracene	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
dibenzofuran	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
diethylphthalate	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
dimethylphthalate	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
fluoranthene	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
fluorene	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
hexachlorobenzene	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
hexachlorobutadiene	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
hexachlorocyclopentadiene	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
hexachloroethane	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
indeno(1,2,3-cd)pyrene	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
isophorone	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
N-nitroso-di-n-propylamine	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
N-nitrosodiphenylamine	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
naphthalene	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
nitrobenzene	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
pentachlorophenol	U (5,000)	U (5,000)	U (5,000)	U (5,000)	U (5,000)
phenanthrene	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
phenol	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
pyrene	U (1,000)	U (1,000)	U (1,000)	52 J ^d	63 J
pyridine	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
bis(2-chloroethoxy)methane	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
bis(2-chloroethyl)ether	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)

Table H-22. (continued).

Analyte	Concentration by Sample ID (ug/L) ^a				
	2CB101014V (V-1) ^b	2CB108014V (V-1) ^b	2CB201014V (V-2) ^b	2CB206014V (V-2) ^b	2CB307018V (V-3) ^b
bis(2-chloroisopropyl)ether	U (1,000)	U (1,000)	U (1,000)	U (1,000)	U (1,000)
bis(2-ethylhexyl)phthalate	83 J	73 J	86 J	200 J	100 J

^a. Analysis performed on liquid portion of samples following gravity filtration; data validation level "C."
^b. Tank identification.
c. U - not detected (detection limit in parentheses).
d. J - estimated value.

Table H-23. 1996 polychlorinated biphenyl (PCB) sampling and analysis results for the liquid phase in Tanks V-1, V-2, and V-3.

Analyte	Concentration by Sample ID (ug/L) ^a				
	2CB101014V (V-1) ^b	2CB108014V (V-1) ^b	2CB201014V (V-2) ^b	2CB206014V (V-2) ^b	2CB307018V (V-3) ^b
Aroclor-1016	U (100) ^c	U (100)	U (100)	U (100)	U (100)
Aroclor-1221	U (200)	U (200)	U (200)	U (200)	U (200)
Aroclor-1232	U (100)	U (100)	U (100)	U (100)	U (100)
Aroclor-1242	U (100)	U (100)	U (100)	U (100)	U (100)
Aroclor-1248	U (100)	U (100)	U (100)	U (100)	U (100)
Aroclor-1254	U (100)	U (100)	U (100)	U (100)	U (100)
Aroclor-1260	U (100)	U (100)	U (100)	U (100)	U (100)

a. Analysis performed on liquid portion of samples following gravity filtration; data validation level "C."
 b. Tank identification.
 c. U - not detected (detection limit given in parentheses).

Table H-24. 1996 miscellaneous sampling and analysis results for liquid phase in Tanks V-1, V-2, and V-3.

Analyte	Concentration by Sample ID ^a				
	2CB101014V (V-1) ^b	2CB108014V (V-1) ^b	2CB201014V (V-2) ^b	2CB206014V (V-2) ^b	2CB307018V (V-3) ^b
Bromide	5.67	5.11	1.22	1.22	1.8
Chloride	240	232	136	102	76.2
Fluoride	U (5) ^c	U (5)	U (5)	U (5)	U (5)
Nitrate	U (2)	U (2)	U (2)	U (2)	0.172
Nitrite	U (4)	U (4)	U (4)	U (4)	U (4)
Phosphate	1.2	1.78 B ^c	21.1	23.3	2.51
Sulfate	12.8 ^d	48.4 B	5.56	18	15.7
Total Organic Carbon	65.9	54.9	NA ^e	105	35
Total Halides	183	151	NA	74.2	65.2
Oil and Grease	4.17	4.29	NA	U (1)	U (1) ^f
Hardness	NA	NA	NA	NA	175 mg/L
Total Suspended Solids	8	65.3	NA	26.7	2.0 ^f

a. Anion, oil and grease, total organic carbon, total halide, and total suspended solids concentrations are in units of mg/L; validation level "C."

b. Tank identification.

c. U - not detected (detection limit given in parentheses).

d. B - reported value is greater than or equal to the instrument detection limit but less than the contract required detection limit.

e. NA - not analyzed.

f. Analysis performed on total sample prior to gravity filtration; remaining analyses performed on liquid portion of sample after separation.

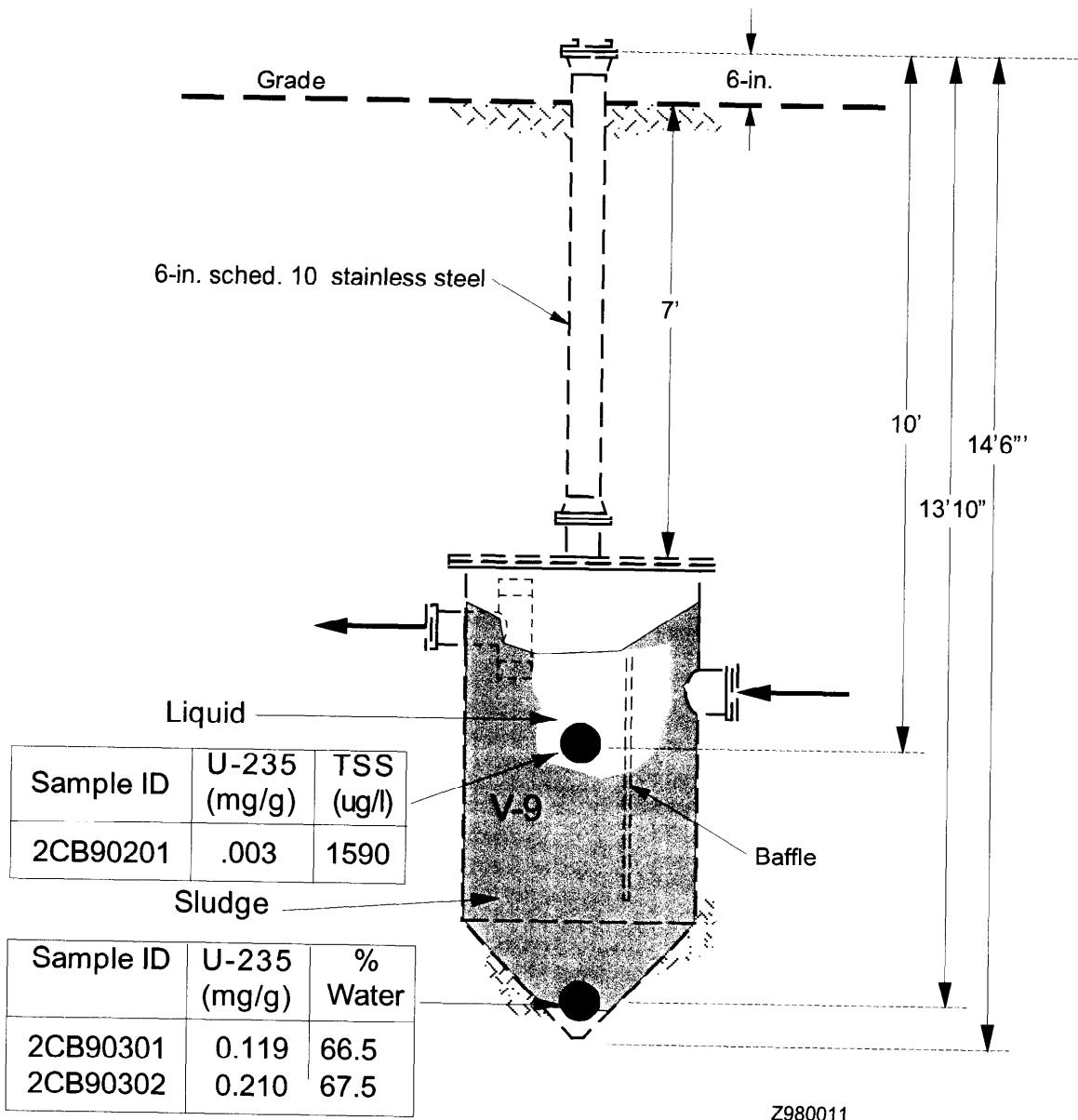


Figure H-4. Tank V-9 1996 sampling locations.

Table H-25. 1996 radiological sampling and analysis results for Tank V-9.

Analyte	Activity (pCi/L or pCi/g) by Sample ID (matrix in parenthesis)		
	2CB90201 (liquid)	2CB90310 (sludge)	2CB90302 (sludge)
U-233 ^a	12,400	U (944) ^b	3,420 B ^c
U-234 ^a	211,000	7,080	13,100
U-235 ^a	6,900 E ^d	255 N ^e	450 N
U-236 ^a	3,260	60 B	127
U-238 ^a	972 E	78.2	82.5
Pu-238	170,000 \pm 12,900	11,500 \pm 610	28,600 \pm 1,370
Pu-239/240	45,300 \pm 3,690	7,380 \pm 423	7,180 \pm 422
Am-241	40,200 \pm 2,500	4,300 \pm 287	5,700 \pm 357
H-3	353,000,000 \pm 180,000	NA ^f	NA
Cm-244	5,210 \pm 390	453 \pm 49.3	704 \pm 66.2
Np-237	200 \pm 36	27.2 \pm 5.71	33.3 \pm 6.12
Total Sr	250,000,000 \pm 25,000,000	5,740,000 \pm 260,000	7,070,000 \pm 300,000
Co-60	1,180 \pm 59.4	1,160,000 \pm 54,000	726,000 \pm 33,000
Cs-137	420,000 \pm 16,200	4,810,000 \pm 220,000	6,370,000 \pm 320,000
Eu-152	566 \pm 37	U	U
Eu-154	272 \pm 22.8	22,200 \pm 2,000	U

a. U isotope analysis by inductively coupled plasma mass spectroscopy.

b. U - not detected (detection limit given in parentheses).

c. B - blank contamination.

d. E - estimated value due to interference.

e. N - spiked sample recovery not within control limits.

f. NA - not analyzed.

Table H-26. 1996 volatile organic compound sampling and analysis results for Tank V-9.

Analyte	Sample Results by Sample ID (ug/L or ug/kg)		
	2CB90201 (liquid)	2CB90301 (sludge)	2CB90302 (sludge)
chloromethane	U (3,700) ^a	59,000 DJ ^b	80,000 DJ
bromomethane	U (7,800)	120,000 DJ	140,000 DJ
vinyl chloride	U (13,000)	U (120,000) D	U (120,000) D
chloroethane	U (17,000)	U (250,000) D	U (250,000) D
methylene chloride	59,000 J	U (250,000) D	U (250,000) D
acetone	U (110,000)	U (1,400,000) D	U (1,400,000) D
carbon disulfide	U (13,000)	U (120,000) D	U (120,000) D
1,1-dichloroethene	U (11,000)	U (120,000) D	U (120,000) D
1,1-dichloroethane	U (3,800)	U (50,000) D	U (50,000) D
cis-1,2-dichloroethene	U (9,500)	U (110,000) D	U (110,000) D
chloroform	U (10,000)	U (120,000) D	U (120,000) D
1,2-dichloroethane	U (25,000)	U (380,000) D	U (380,000) D
2-butanone	U (56,000)	U (750,000) D	U (750,000) D
1,1,1-trichloroethane	58,000 J	1,800,000 D	2,600,000 D
carbon tetrachloride	U (11,000)	U (120,000) D	U (120,000) D
bromodichloromethane	U (12,000)	U (120,000) D	U (120,000) D
1,2-dichloropropane	U (18,000)	U (250,000) D	U (250,000) D
cis-1,3-dichloropropene	U (14,000)	U (120,000) D	U (120,000) D
trichlorethene	410,000	14,000,000 D	22,000,000 D
dibromochloromethane	U (15,000)	U (120,000) D	U (120,000) D
1,1,2-trichloroethane	U (10,000)	U (120,000) D	U (120,000) D
benzene	U (17,000)	U (250,000) D	U (250,000) D
trans-1,2-dichloroethene	U (7,500)	U (88,000) D	U (88,000) D
trans-1,3-dichloropropene	U (19,000)	U (250,000) D	U (250,000) D
bromoform	U (43,000)	U (500,000) D	U (500,000) D
4,methyl-2-pentanone	U (14,000)	U (120,000) D	U (120,000) D
2-hexanone	U (38,000)	U (500,000) D	U (500,000) D
tetrachloroethene	U (17,000)	460,000 DJ	600,000
1,1,2,2-tetrachloroethane	U (11,000)	U (120,000) D	U (120,000) D
toluene	U (15,000)	U (250,000) D	U (250,000) D

Table H-26. (continued).

Analyte	Sample Results by Sample ID (ug/L or ug/kg)		
	2CB90201 (liquid)	2CB90301 (sludge)	2CB90302 (sludge)
chlorobenzene	U (10,000)	U (120,000) D	U (120,000) D
ethylbenzene	U (11,000)	U (120,000) D	U (120,000) D
styrene	U (17,000)	U (250,000) D	U (250,000) D
xylene (ortho)	U (14,000)	U (120,000) D	U (120,000) D
<u>xylene (total meta and para)</u>	U (19,000)	U (250,000) D	U (250,000) D

a. U - not detected (detection limit given in parentheses).
b. D - dilution factor of 10,000, J - estimated value.

Table H-27. 1996 semivolatile organic compound sampling and analysis results for Tank V-9.

Analyte	Concentration by Sample ID (ug/L or ug/kg)		
	2CB90201 (liquid)	2CB90301 (sludge)	2CB90302 (sludge)
1,2,4-trichlorobenzene	U (7) ^a	32,000 J ^b	26,000 J
1,2-dichlorobenzene	210 E ^c	350,000	280,000
1,3-dichlorobenzene	U (6)	16,000 J	13,000 J
1,4-dichlorobenzene	49	90,000 J	73,000 J
2,4,5-trichlorophenol	U (17)	U (770,000)	U (670,000)
2,4,6-trichlorophenol	U (10)	U (150,000)	U (130,000)
2,4-dichlorophenol	U (8)	U (150,000)	U (130,000)
2,4-dimethylphenol	79	270,000	260,000
2,4-dinitrophenol	U (27)	U (770,000)	U (670,000)
2,4-dinitrotoluene	U (10)	U (150,000)	U (130,000)
2,6-dinitrotoluene	U (8)	U (150,000)	U (130,000)
2-chloronaphthalene	U (10)	U (150,000)	U (130,000)
2-chlorophenol	U (6)	U (150,000)	U (130,000)
2-methylnaphthalene	U (14)	110,000 J	100,000 J
2-methylphenol	830 E	490,000	500,000
2-nitroaniline	U (6)	U (770,000)	U (670,000)
2-nitrophenol	U (7)	U (150,000)	U (130,000)
3,3'-dichlorobenzidine	U (66)	U (150,000)	U (130,000)
3-nitroaniline	U (17)	U (770,000)	U (670,000)
4,6-dinitro-2-methyphenol	190 E	U (770,000)	U (670,000)
4-bromophenyl-phenylether	U (7)	U (150,000)	U (130,000)
4-chloro-3-methylphenol	U (8)	U (150,000)	U (130,000)
4-chloroaniline	U (27)	U (150,000)	U (130,000)
4-chlorophenyl-phenylether	U (7)	U (150,000)	U (130,000)
4-methylphenol	830 E	260,000	260,000
4-nitroaniline	U (4)	U (770,000)	U (670,000)
4-nitrophenol	37	U (770,000)	U (670,000)
acenaphthene	U (6)	U (150,000)	U (130,000)
acenaphthylene	U (7)	U (150,000)	U (130,000)
anthracene	U (5)	U (150,000)	U (130,000)
benzo(a)anthracene	U (8)	U (150,000)	U (130,000)

Table H-27. (continued).

Analyte	Concentration by Sample ID (ug/L or ug/kg)		
	2CB90201 (liquid)	2CB90301 (sludge)	2CB90302 (sludge)
benzo(a)pyrene	U (1)	U (150,000)	U (130,000)
benzo(b)fluoranthene	U (7)	U (150,000)	U (130,000)
benzo(g,h,I)perylene	U (3)	U (150,000)	U (130,000)
benzo(k)fluoranthene	U (6)	U (150,000)	U (130,000)
benzoic acid	NA ^d	U (770,000)	U (670,000)
benzyl alcohol	NA	U (150,000)	U (130,000)
butylbenzylphthalate	U (8)	U (150,000)	U (130,000)
carbozole	U (10)	U (150,000)	U (130,000)
chrysene	U (8)	U (150,000)	U (130,000)
di-n-butylphthalate	U (3)	15,000 J	13,000 J
di-n-octylphthalate	6 J	U (150,000)	U (130,000)
dibenz(a,h)anthracene	U (5)	U (150,000)	U (130,000)
dibenzofuran	U (4)	U (150,000)	U (130,000)
diethylphthalate	U (8)	U (150,000)	U (130,000)
dimethylphthalate	U (7)	U (150,000)	U (130,000)
fluoranthene	U (8)	U (150,000)	U (130,000)
fluorene	U (5)	U (150,000)	U (130,000)
hexachlorobenzene	U (7)	U (150,000)	U (130,000)
hexachlorobutadiene	U (10)	U (150,000)	U (130,000)
hexachlorocyclopentadiene	U (13)	U (150,000)	U (130,000)
hexachloroethane	U (8)	U (150,000)	U (130,000)
indeno(1,2,3-cd)pyrene	U (36)	U (150,000)	U (130,000)
isophorone	U (7)	U (150,000)	U (130,000)
N-nitroso-di-n-propylamine	U (13)	U (150,000)	U (130,000)
N-nitrosodimethylamine	U (11)	NA	NA
N-nitrosodiphenylamine	U (10)	U (150,000)	U (130,000)
naphthalene	U (8)	44,000 J	38,000 J
nitrobenzene	U (9)	U (150,000)	U (130,000)
pentachlorophenol	U (13)	U (770,000)	U (670,000)
phenanthrene	U (6)	21,000 J	19,000 J
phenol	100 E	68,000 J	71,000 J
pyrene	U (12)	U (150,000)	U (130,000)

Table H-27. (continued).

Analyte	Concentration by Sample ID (ug/L or ug/kg)		
	2CB90201 (liquid)	2CB90301 (sludge)	2CB90302 (sludge)
tributylphosphate	190 E	NA	NA
pyridine	U (10)	U (150,000)	U (130,000)
bis(2-chloroethoxy)methane	U (8)	U (150,000)	U (130,000)
bis(2-chloroethyl)ether	U (7)	U (150,000)	U (130,000)
bis(2-chloroisopropyl)ether	U (6)	U (150,000)	U (1,300,000)
bis(2-ethylhexyl)phthalate	38	1,100,000	950,000

a. U - not detected (detection limit in parentheses).
 b. J - estimated value.
 c. E - concentration exceeded the calibration range of the gas chromatograph/mass spectroscopy instrument.
 d. NA - not applicable.

Table H-28. 1996 Polychlorinated biphenyl (PCB) sampling and analysis results for Tank V-9.

Analyte	Concentration by Sample ID (ug/L or ug/kg)		
	2CB90201 (liquid)	2CB90301 (sludge)	2CB90302 (sludge)
Aroclor-1016	U (5.4) ^a	U (30,000)	U (24,000)
Aroclor-1221	U (5.4)	U (60,000)	U (47,000)
Aroclor-1232	U (5.4)	U (30,000)	U (24,000)
Aroclor-1242	U (5.4)	U (30,000)	U (24,000)
Aroclor-1248	U (5.4)	U (30,000)	U (24,000)
Aroclor-1254	U (90)	U (30,000)	U (24,000)
<u>Aroclor-1260</u>	<u>36 J^b</u>	310,000 P ^c	260,000 P

a. U - not detected (detection limit given in parentheses).

b. J - estimated concentration.

c. P - >25% difference in detected concentrations between two gas chromatograph (GC) columns; lower value reported.

Table H-29. 1996 inorganic sampling and analysis results for Tank V-9.

Analyte	Concentration by Sample ID (ug/L or mg/kg)		
	2CB90201 (liquid)	2CB90301 (sludge)	2CB90302 (sludge)
Aluminum	U (236) P ^a	2,160 P	2,290 P
Antimony	U (162) P	6.4 BNP ^b	22.2 BNP
Arsenic	U (232) P	U (3.7) P	U (3.8) P
Barium	1,020 P	232 P	515 P
Beryllium	65 P	24.6 P	25.7 P
Boron	37,600 P	42.6 P	47.3 P
Cadmium	1,900 P	22.5 P	30.9 P
Calcium	90,600 P	5,660 P	5,270 P
Chromium	1,460 P	975 P	1,100 P
Cobalt	116 BP	4.2 P	5.8 P
Copper	2,980 P	328 P	431 P
Iron	17,900 P	9,710 P	9,560 P
Lead	942 P	540 NP	592 NP
Magnesium	208,000 P	1,380 P	1,670 P
Manganese	23,500 P	825 P	815 P
Mercury	563 CV ^c	2,050 CV	2,110 CV
Nickel	13,800 P	354 P	435 P
Potassium	8,340,000 A ^d	10,300 EA ^e	6,870 EA
Selenium	U (256) P	U (4.1) NP	U (4.2) NP
Silicon	25,000 NEP	248 NP	292 NP
Silver	U (31.5) P	657 *P	646 *P
Sodium	3,150,000 A	1,950 EA	1,280 EA
Thallium	U (370) P	U (5.9) P	7.8 BP
Tin	U (116) P	29.6 P	33.4 P
Vanadium	U (22) P	5.4 P	6.8 P
Zinc	18,200 P	1,790 P	1,710 P

a. U - not detected (detection limit given in parentheses); P - analysis by inductively coupled plasma atomic emission spectroscopy.

b. B - reported value is greater than or equal to the instrument detection limit but less than the contract required detection limit, N - spiked sample recovery not within control limits.

c. CV - analysis by cold vapor atomic absorption spectroscopy.

d. A - analysis by flame atomic absorption spectroscopy.

e. E - estimated value due to interference.

* - duplicate analysis not within control limits.

Table H-30. 1996 miscellaneous sampling and analysis results for Tank V-9.

Analyte	Concentration by Sample ID		
	2CB90201 (liquid) ^a	2CB90301 (sludge) ^b	2CB90302 (sludge) ^b
Bromide	59.2	12.3	12.3
Chloride	10,900	483	503
Fluoride	1.44 B ^c	7.41	5.75
Nitrate	63.2	34.5	36.7
Nitrite	U (111) ^d	7.11	U (0.05)
Phosphate	2.42 B	1.09 B	0.8 B
Sulfate	290	45.3	44.5
Total Organic Carbon	3,060	10,022.7	12,924.7
Total Halides	9,380	NP ^e	NP
density (solid)	NA ^e	NP	NP
Total Suspended Solids	1,590	NA	NA
pH	7.89	7.7	7.44
% water	NA	66.5	67.5

- a. Anion, total organic carbon, total suspended solids, and total halide concentrations are in units of ug/L for the liquids.
- b. Anions are in units of mg/L and total organic carbon is in units of mg/kg for the sludges.
- c. B – blank contamination.
- d. U - not detected (detection limit given in parentheses).
- e. NP - analysis not performed. NA - not applicable.

Table H-31. 1996 particle size analysis for Tank V-9 sludge.

	2CB90301 (%)	2CB90302 (%)
Particle density	1.28 g/cc	1.32 g/cc
Particle size fraction	39.7	41
30 mesh	65.8	70.0
50 mesh	8.4	7.9
70 mesh	1.7	1.8
100 mesh	3.4	3.5
200 mesh	4.4	5.0
400 mesh	3.5	3.1
>400 mesh	12.7	8.7

Sand Filter
Sample Results

Table H-32. 1997 sand filter sample results.

Compound Name	Sample Unit	Q-Flag (uncertainties)
TV9001017A – RAD		
pCi/g		
ALPHA	16,500	201
Ag-106M	58.2	12.1
Ag-110M	5,210	335
Am-241	10.7	.715
BETA	373,000	695
Ce-144	-65.6	54.9
Cm-242	0	.598
Cm-244	0	.704
Co-58	2	15.2
Co-60	36,200	1,860
Cs-134	-3.19	11.4
Cs-137	109,000	6,980
Eu-152	631	105
Eu-154	113	22.1
Eu-155	-30.5	25.1
Mn-54	-5.04	10.8
Nb-95	29	12.5
Np-237	0	823
Pu-238	42.1	1.3
Pu-239	45.2	1.38
Ru-106	98	101
Sb-125	-19.2	36.2
Sr-90	103,000	504
Te-99	1,290	46.5
Th-228	0	4.44
Th-230	0	8.43
Th-232	0	2.43
U-234	21,900	737
U-235	661	26.5
U-238	90.7	6.03
Zn-65	236	28

Table H-32. (continued).

Compound Name	Sample Unit	Q-Flag (uncertainties)
TV9001017A – SEMIS-8270		
$\mu\text{g/kg}$		
1,2,4 Trichlorobenzene	55,000	U
1,2 Dichlorobenzene	55,000	U
1,3 Dichlorobenzene	55,000	U
1,4 Dichlorobenzene	55,000	U
2,4,5 Trichlorophenol	270,000	U
2,4,6 Trichlorophenol	55,000	U
2,4 Dichlorophenol	55,000	U
2,4 Dimethylphenol	64,000	
2,4 Dinitrophenol	270,000	U
2,4 Dnitroluene	55,000	U
2,6 Dinitroluene	55,000	U
2 Chloronahilhalene	55,000	U
2 Chlorophenol	55,000	U
2 Methyinaphthalene	55,000	U
2 Methylphenol	54,000	J
2 Nitroanline	270,000	U
2 Nitrophenol	55,000	U
3,3 Dichlorobenzldine	55,000	U
3 Nitroanline	270,000	U
4,6 Dintro 2 methylphenol	270,000	U
4 Bromophenyl phenylether	55,000	U
4 Chloro 3 methylphenol	55,000	U
4 Chloroanline	55,000	U
4 Chlorophenyl phenylether	55,000	U
4 Methylphenol	53,000	U
4 Nitroanline	270,000	U
4 Nitrophenol	270,000	U
Acenaphithene	55,000	U

Table H-32. (continued).

Compound Name	Sample Unit	Q-Flag (uncertainties)
TV9001017A – SEMIS-8270 (continued)		
<u>µg/kg</u>		
Anthracene	55,000	U
Benzo(a)anthracene	55,000	U
Benzo(a)pyrene	55,000	U
Benzo(b)fluoranthene	55,000	U
Benzo(g,h,f)perylene	55,000	U
Benzo(k)fluoranthene	55,000	U
Benzoic acid	13,000	J
Benzyl alcohol	55,000	U
Bulylbenzylphthaiate	55,000	U
Carbazote	55,000	U
Chrysene	55,000	U
Di-n-bulyiphilhiaite	55,000	U
Di-n-octylphthaiate	55,000	U
Dibenz(a,h)anthracene	55,000	U
Diethylphthaiate	55,000	U
Dimethylphthaiage	55,000	U
Fluoranthene	55,000	U
Fluorene	55,000	U
Hexachlorabenzene	55,000	U
Hexachlorocyclopentadlene	55,000	U
Hexachloroethane	55,000	U
Indeno(1,2,3-cd)cyrrens	55,000	U
Isophorone	55,000	U
N-Nitroso-dl-n-propylamine	55,000	U
N-Nitrosodlphenylamine	55,000	U
Naphthalene	55,000	U
Nitrobenzene	55,000	U
Pentachlorophenol	270,000	U

Table H-32. (continued).

Compound Name	Sample Unit	Q-Flag (uncertainties)
TV9001017A – SEMIS-8270 (continued)		
$\mu\text{g}/\text{kg}$		
Phenanthrene	55,000	U
Phenol	14,000	J
Pyrene	55,000	U
Pyridine	55,000	U
bfs(2-Chloroethoxy)methane	55,000	U
Bfs(2-Chloroethyl)ether	55,000	U
Bfs(2-Chlorolsopropyl)ether	55,000	U
Bfs(2-Ethylberyl)phihaisis	110,000	
TV9001017A – SEMIS – TCLP		
$\mu\text{g}/\text{L}$		
1,4 Dichlorobenzene	100	U
2,4,5 Trichlorophenol	500	U
2,4,5 Trichlorophenol	100	U
2,4 Dinitrotoluene	100	U
2 Methylphenol	100	U
4 Methylphenol	100	U
Hexachlorobenzene	100	U
Hexachlorobutadlene	100	U
Hexachloroethane	100	U
Nitrobenzene	100	U
Peniachlorophenol	500	U
Pyridine	100	U
TV9001017A – VOCS- TCLP		
$\mu\text{g}/\text{L}$		
1,1 Dichloroethene	5	U
1,2 Dichloroethane	5	U
1,4 Dichlorobenzene	5	U

Table H-32. (continued).

Compound Name	Sample Unit	Q-Flag (uncertainties)
TV9001017A – VOCS- TCLP (continued)		
$\mu\text{g/L}$		
2 Butanone	10	U
Benzene	5	U
Carbon Tetrachloride	5	U
Chlorophenzenne	5	U
Chloroform	5	U
Tetrachloroethene	1	J
Trichloroethene	5	U
Vinyl Chloride	5	U
TV900101TV – VOCS-8260		
$\mu\text{g/kg}$		
1.1.1 Trichloroethane	14	U
1.1.2.2 Tetrachloroethane	14	U
1.1.2 Trichloroethane	14	U
1.1 Dichloroethane	14	U
1.2 Dichloroethane	14	U
1.2 Dichloropropane	14	U
2 Butanone	14	U
2 Hexanone	14	U
4 Methyl-2 Penilanone	14	U
Acetone	14	U
Benzene	14	U
Bromodichloromethane	14	U
Bromoform	14	U
Bromomethane	14	U
Carbon Disulfide	14	U
Carbon Tetrachloride	14	U

Table H-32. (continued).

Compound Name	Sample Unit	Q-Flag (uncertainties)
TV900101TV – VOCS-8260 (continued)		
$\mu\text{g}/\text{kg}$		
Chlorobenzene	14	U
Chloroethane	14	U
Chloroform	14	U
Chloromethane	14	U
Dibromochloromethane	14	U
Ethylbenzene	14	U
Methylene Chloride	14	U
Styrene	14	U
Tetrachloroethane	2	J
Toluene	14	U
Trichloroethene	14	U
Vinyl Chloride	14	U
Xylene (ortho)	14	U
Xylene (total meta/para)	14	U
Cl _s 1,2 Dichloroethene	14	U
Cl _s 1, 3 Dichloropropene	14	U
Trans1,2 Dichloroethane	14	U
Trans1,3 Dichloropropene	14	U

U - Not detected, detection limit presented.

J - Estimated value.

Table H-33. 1997 sand filter data.

Compound Name	Sample Unit	Q-Flag (uncertainties)
TV9001017A – INORG		
<u>mg/kg</u>		
Arsenic	25	P
Barium	310	P
Cadmium	121	P
Chromium	1,985	P
Lead	1,349	P
Mercury	1,930	DMCV
Selenium	5.36	P
Silver	247	P
TV9001017A – INORG – TCLP		
<u>µg/L</u>		
Arsenic	19.4	UP
Barium	138.5	P
Cadmium	385.3	P
Chromium	17.7	P
Lead	219.6	P
Mercury	7.33	CV
Selenium	40.2	UP
Silver	4.5	UP
TV9001017A – HERBS – TCLP		
<u>µg/L</u>		
2,4,5 TP (Silver)	2	U
2,4-D	20	U
TV9001017A – PESTS – TCLP		
<u>µg/L</u>		
Chlordane (technical)	10	U
Endrin	1	U
Heptachlor	.5	U
Heptachlor epoxide	.5	U
Methoxychlor	5	U
Toxaphene	50	U
Gamma-BHC (lindane)	.5	U

Table H-33. (continued).

Compound Name	Sample Unit	Q-Flag (uncertainties)
TV9001017A – PCBS		
<u>µg/kg</u>		
Aroclor-1016	27	U
Aroclor-1221	55	U
Aroclor-1232	27	U
Aroclor-1242	27	U
Aroclor-1248	27	U
Aroclor-1254	27	U
Aroclor-1260	93,000	E
TV9001017ADL – PCBS		
<u>µg/kg</u>		
Aroclor-1016	14,000	U
Aroclor-1221	27,000	U
Aroclor-1232	14,000	U
Aroclor-1242	14,000	U
Aroclor-1248	14,000	U
Aroclor-1254	14,000	U
Aroclor-1260	290,000	

U – Not detected, detection limit presented.
P – Analysis by inductively coupled plasma atomic emission spectroscopy.
CV - Analysis by cold vapor atomic absorption spectroscopy.
E – Concentration exceeds calibration range.
D – The sample required dilution for analysis due to high levels of mercury.
M - An aliquot for the inductively coupled plasma (ICP) digestate was analyzed for mercury due to the elevated concentration.

